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Novell set to intro Comm Server pack

By Laura DiDio
Senior Editor

SUNNYVALE, Calif. — Novell, Inc. is scheduled to announce this week its NetWare 386 Communications Services and programs for the product that will enable users to access a range of network environments from within existing NetWare applications.

The Comm Server is a server-based software product for Version 3.1 of Novell's NetWare 386 local-area network operating system. It is designed to support communications programs that provide the necessary software and protocol support to enable NetWare users to access non-NetWare resources.

The company will unveil several applications for the Comm Server platform tomorrow, including NetWare Services for SAA, which lets users access applications that comply with IBM's Systems Application Architecture, said Gerald Machi, Novell's director of product marketing for communications products.

The Comm Server will allow software developers to build programs supporting other LAN-to-host and LAN-to-LAN links, Machi said.

Both the Comm Server and the NetWare Services for SAA soft-

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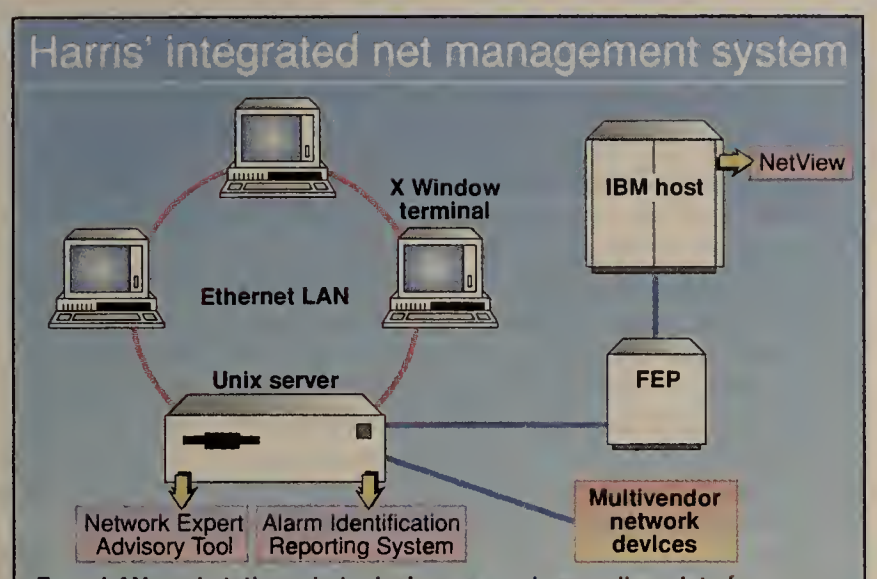

From LAN workstations, help desk personnel can call up data from NEAT, an expert system that identifies and helps resolve problems in the SNA/VTAM network, and AIRS, which collects alarms from a variety of network equipment and management systems.

GRAPHIC BY SUSAN SLATER — SOURCE: HARRIS CORP., MELBOURNE, FLA.

Harris builds net control system to police diverse net

Integrated net mgmt. tool will isolate net faults, offer corrective remedies for help desk personnel.

By Wayne Eckerson
Senior Writer

MELBOURNE, Fla. — Harris Corp. last week said it has begun testing a homegrown, Unix-based integrated net management system designed to detect and resolve problems on its 10,000-node IBM Systems Network Architecture net.

The system allows help desk personnel and network operators using X Window System workstations to monitor and control the logical aspects of the SNA net, as well as physical components from multiple vendors, such as transmission facilities, multiplexers, channel service units, bridges and other devices.

Harris is developing an expert system correlation capability that will enable the net management system to cross-reference multiple alarms to determine the actual cause of a network problem and offer advice on how to resolve it.

Existing integrated network management systems do not offer that level of functionality, according to Charlie Snell, director of computing and communica-

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Court strikes down Computer III edict

Judges say FCC erred in 1986 decision; ruling could trip up ONA, local price caps, other plans.

By Anita Taff
Washington Bureau Chief

SAN FRANCISCO — A federal district court here last week struck down the FCC's Third Computer Inquiry decision in a ruling that could shake the regulatory landscape as profoundly as the earthquake that rocked this city last year.

A three-judge panel ruled that the Federal Communications Commission acted capriciously in 1986 when it replaced rules requiring regional Bell holding companies to offer enhanced services through separate subsidiaries with accounting rules and other safeguards designed to prevent anticompetitive activities.

The court also said the FCC improperly preempted state regulators by applying its Open Network Architecture (ONA) rules to all enhanced services, even those offered on an intrastate basis.

The ruling calls into question whether the FCC can proceed with ONA, a key component of Computer III that spells out how companies can offer enhanced services from regulated units, and it may restrict the FCC's ability to impose other federal regulations, such as price caps, on local exchange carriers. The ruling could also trip up legislation aimed at freeing the RBHCs from Consent Decree restrictions on information services and manufacturing.

Unless the FCC successfully appeals the case, the RBHCs will have to offer all enhanced ser-

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European carriers are offering incentives to attract network hub business from U.S. firms.
See story, page 2.

Users rein in ANI projects after ruling

By Bob Wallace
Senior Editor

A number of users around the country have frozen or canceled ANI projects in the wake of a precedent-setting court decision that barred Bell Telephone Co. of Pennsylvania from offering caller identification services in that state.

Users and analysts last week said they fear that other states may follow suit and even extend the ban to interexchange services, such as 800 and Integrated Services Digital Network offerings, that support automatic number identification.

Two weeks ago, a state appeals court ruled that Bell of Pennsylvania's caller ID service violated Pennsylvania's wiretap law as well as privacy provisions in the state's constitution, and it

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NETLINE

NEWSPAPER

FEATURE

Switched data offers more for larger users

By Daniel Briere
Contributing Editor

Today's switched data services from the major interexchange carriers and Bell operating companies present users with opportunities as well as obstacles.

Switched data services offer more flexibility and greater features than ever before — and at more reasonable costs. Some switched 56K bit/sec or 64K bit/sec data services are no more expensive than standard private-line voice services.

But the obstacles keeping users from taking advantage of these services are large: a lack of conformity in local exchange access and a dearth of availability.

Upon surveying coverage areas of interexchange carriers and BOCs, users can reasonably conclude that switched data services are still a large-user, large-applica-

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AT&T tries to lure users to Unix with superserver

80486-based StarServer E can simultaneously act as a multiuser host and a server for DOS clients.

By Susan Breidenbach
West Coast Bureau Chief

ATLANTA — AT&T jumped into the LAN superserver market at last week's Comdex/Spring here with the introduction of a powerful, aggressively priced system that has true symmetrical multiprocessing capabilities.

AT&T's StarServer E is based on Intel Corp.'s 80486 chip and the Extended Industry Standard Architecture (EISA). It is currently being certified as a platform for Novell, Inc.'s NetWare 386, and Banyan Systems, Inc. plans to ensure that the next version of VINES (Release 4.0) runs on it.

But AT&T said it is hoping that StarServer E will serve as a vehicle for moving Unix into the general business environment. To this end, AT&T, in conjunction with Pyramid Technology Corp., has developed a symmetrical multiprocessing version of Unix, System V Release 4.3, which it has ported to StarServer E.

When running this operating system with the next version of LAN Manager/X, StarServer E will be able to act simultaneously as a multiuser host to terminals and as a server providing file, print, application and communications services to DOS clients.

"It integrates LAN Manager

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European carriers hustle to stake private-line claim

Next few years will determine their financial futures.

By Barton Crockett
Senior Editor

Because they believe the next few years will be crucial in the battle to win international private-line market share, European carriers are stepping up efforts to woo users by lowering prices and offering other perquisites.

Convinced that global network architectures will be firmly established and that price differences between carriers will be insignificant by the mid-1990s, European carriers are trying to land as many customers as they can now in what is expected to be a rapidly growing market.

"Most carriers see the next few years as critical for building up enough volume to keep unit costs low," said Susan Mirbach, president of Westport, Conn.-based RTT-Belgium Telecom USA, the U.S. subsidiary of Belgium's national carrier, Regie des Telegraphs et Telephones (RTT). "There's really a window of opportunity that everybody's trying to take advantage of."

The competition is focused on the market for hub locations of international networks. U.S. companies typically run private lines into a central European hub and then route multiple private lines from there to other cities on the continent.

European carriers compete

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Frame-relay standard gets T-1 mux makers' backing

By Paul Desmond
Senior Editor

A growing number of T-1 multiplexer vendors stand poised to throw their support behind the emerging frame-relay interface specification, which promises to ease local- and wide-area network integration.

To date, Netrix Corp., Newbridge Networks, Inc. and StrataCom, Inc. are the only T-1 multiplexer vendors that have announced frame-relay support. But others, including AT&T Paradyne, General DataComm Industries, Inc. (GDC), Network Equipment Technologies, Inc. (NET), Racal-Milgo and Timeplex, Inc., recognize the technology's importance and are at least giving it serious consideration.

Frame relay is an emerging Integrated Services Digital Network standard for a high-speed interface between data communications devices. It is often touted as an ideal way to link LANs over wide-area backbone networks.

The standard defines how a device such as a LAN bridge or router can interact with a backbone device such as a T-1 multiplexer or packet switch to secure high-bandwidth links on an as needed basis. It also specifies how to packetize data in variable length frames, as well as a 16-bit header that includes flow control

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Briefs

High-speed net gets go-ahead. The National Science Foundation last week awarded the Corporation for National Research Initiatives a $15 million grant to build a 1G bit/sec high-speed national network. Private companies — including AT&T and IBM — will contribute a total of $100 million to the project. The network will be used for such applications as sending and receiving three-dimensional medical imaging and multimedia teleconferencing.

Flying high with FDDI. The Strategic Air Command at Offutt Air Force Base in Nebraska held a ribbon-cutting ceremony Friday to unveil its Fiber Distributed Data Interface local-area network. The LAN was built under contract with Unisys Corp., which developed the FDDI products but later turned them over to its subsidiary, Timeplex, Inc.

Timeplex announced the products in January as its Time/LAN 100 family of concentrators and routers ("Timeplex unwraps internetwork tools for FDDI, other local nets," *NW,* Feb. 5). Timeplex is billing the project as one of the world's largest FDDI LANs.

Hitachi reports chip advance. Hitachi, Ltd. last week said it has developed a working prototype of a 64M-byte computer memory chip that could pave the way for desktop supercomputers. The largest capacity chip commonly used today is a 1M-byte device, although several manufacturers are now shipping 4M-byte chips as well. Hitachi declined to say when the chip will be ready for commercial production.

OSI net management advances. The Open Systems Interconnection/Network Management Forum (OSI/NM Forum) this week will introduce specifications that will enable members to build OSI-based integrated network management applications supporting fault and configuration management. The group will also announce a timetable for the release of its second and third set of specifications, which specify how to build applications supporting performance, accounting and security management.

The vendor group will also reveal details about a suite of conformance tests it jointly developed with the Corporation for Open Systems International and the Standards Promotion and Application Group to ensure that OSI-based management applications conform to OSI/NM Forum guidelines.

Racal InterLan axes projects, staff. Racal InterLan last week said it pulled the plug on its LMN Server and LIMES Gateway software products, which were being developed to integrate LAN Manager and Novell, Inc. NetWare nets. The company also laid off 50 workers, 25% of its work force. Sources within Racal InterLan said the company decided to halt production of products because "the market for LAN Manager never materialized."

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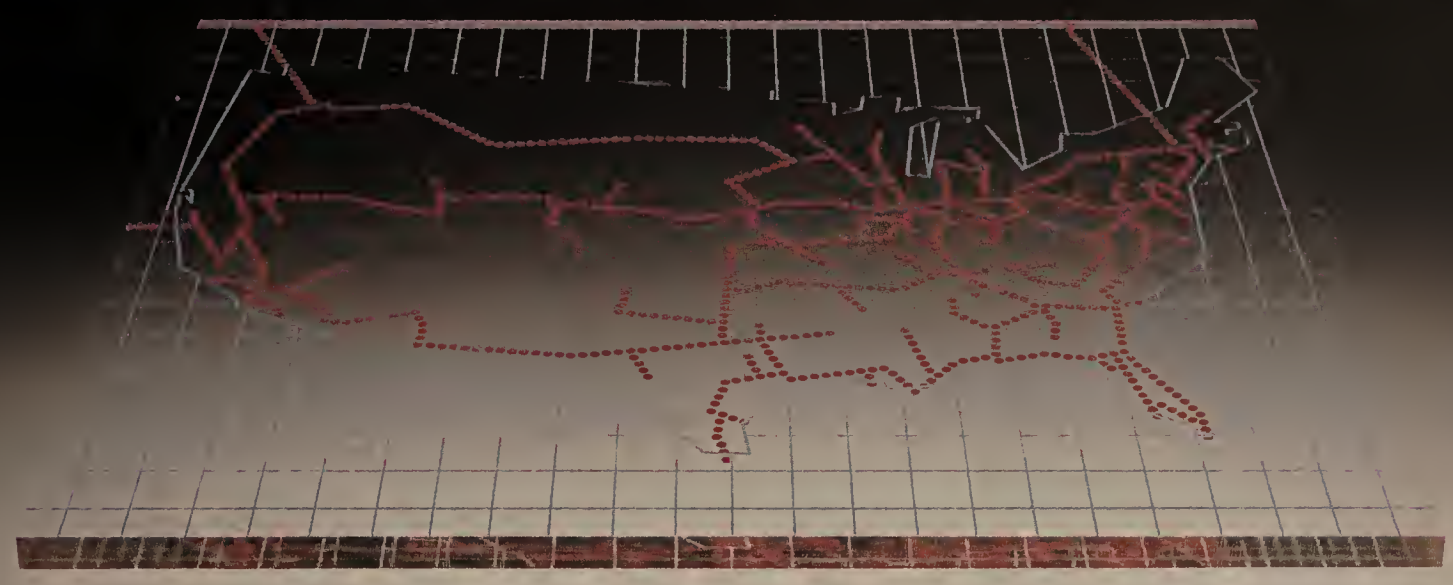

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IT'S A NEW WORLD℠

Firm promises LU 6.2, SQL support for Net/Master

Systems Center details its upgrade strategy to address issue of multivendor net management.

By Paul Desmond
Senior Editor

DALLAS — Systems Center, Inc. last week detailed forthcoming enhancements to its Net/Master SNA network management system, including support for IBM's LU 6.2 protocol and an SQL data base verb set, both of which address multivendor net management.

At the Systems Center 1990 Annual User Conference here, the company also committed to providing a data mapping facility that will help users write applications to manage multivendor networks and promised to provide software that will enable customers to use any Net/Master management console to view the network as a single entity.

Analysts said the announcements could lure more customers to Net/Master, which many consider to be easier to use and more versatile than IBM's NetView.

"Net/Master is where NetView ought to be in two years," said Bart Stuck, president of Business Strategies, a consultancy in Westport, Conn. "The enhancements will help [Systems Center] and will also keep IBM honest."

LU 6.2 support

Systems Center said it will add support for IBM's LU 6.2, Advanced Program-to-Program Communications protocol into Net/Master's fourth-generation Network Control Language (NCL). IBM has promised to announce a similar capability for NetView by the end of the year.

LU 6.2 will let users write programs in NCL that can communicate with any other program or workstation supporting LU 6.2, said Steve Dawson, general manager of customer services and a founder of Software Developments International Pty., Ltd. (SDI). The Australia-based developer of Net/Master, SDI was acquired by Systems Center in a deal completed last week.

Systems Center is planning to use LU 6.2 to develop graphics applications that not only provide network maps showing outages, but that also include a Presentation Manager-based interface to problem determination programs for session tracking and diagnostics.

LU 6.2 could also be used to forge links from non-Systems Network Architecture management systems to Net/Master. Systems Center is talking to a number of vendors regarding links to their systems, although Dawson declined to name them.

Systems Center said it would also support SQL in Net/Master, which will help address multivendor net management. Initially, the company will provide an interface to IBM's DB2 relational data base management system, but that could be extended to other DBMSs in the future.

Links to relational DBMS products help create a single logical repository for all net management data. The repository can be used, for example, to store configuration data that is of use when tracking faults or performance data used for trend analysis.

Frank Dzubeck, president of the Washington, D.C. consultancy Communications Network Architects, Inc., said that while support for SQL is a good sign, users should recognize that there are currently incompatibilities in each vendor's management information bases, which define managed elements in the net-

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NetView, Net/Master price comparison

Total cost of three-year ownership

Product	Processor		
	Group 30	Group 40	Group 50
Net/Master - Systems Center Version 2.1	$45,080	$49,840	$54,250
Net/Master - Cincom Systems Version 2.1	$47,340	$56,000	$56,000
NetView Release 3	$49,680*	$54,720*	$60,120*

Comparable net management software packages for IBM MVS/XA host. Systems Center, Inc. recently acquired Net/Master marketing rights from Cincom Systems, Inc.

*Based on monthly rental fee.

GRAPHIC BY SUSAN SLATER SOURCES: IBM, WHITE PLAINS, N.Y., SYSTEMS CENTER, RESTON, VA.

AT&T entices EPSCS firms to switch to Tariff 12 deal

Dozen users share Tariff 12 under Option 51 plan for SDN, 800 services, dedicated T-1 backbone.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — AT&T last week announced plans to migrate 12 of the 14 users of its Enhanced Private Switched Communications Service (EPSCS) to network services offered as a package deal under Tariff 12.

EPSCS is a shared private-line network that AT&T has provided for about 11 years to a group of large companies including Aluminum Co. of America, Conrail Corp., LTV Corp., PPG Industries, Inc., Quantum Chemical Corp., USX Corp. and Xerox Corp.

AT&T declined to divulge which companies would move over to the Tariff 12 deal. Tom Elias, president of the EPSCS users association and LTV's corporate telecommunications manager, also declined to comment.

AT&T said it would continue to offer EPSCS for users that decide not to migrate to the Tariff 12 deal, which is said to include Software-Defined Network and 800 services, as well as a dedicated T-1 backbone.

Unlike other Tariff 12 arrangements, the current offering was filed under Option 51, which enables several users to band together to receive a single tariff offering.

Last April, Xerox bailed out of EPSCS in favor of a Tariff 12 package and encouraged other users to follow its lead. AT&T said Xerox's Tariff 12 plan would be folded into the group offering.

Under the Tariff 12 filing, each user must assume at least $2 million in minimum annual charges.

According to tariff filings, measured rate charges for voice calls start at 1.26 cents for the initial 18 seconds of a domestic night call and 0.43 cents for each additional six seconds of measured time. AT&T charges 1.4 cents for an 18-second business day call and 0.47 cents for each additional six seconds. AT&T is charging 32 cents for the first 30 seconds of a peak 9 a.m. to 1 p.m. call to London and 6.4 cents for each additional six seconds.

The basic monthly service charge for the group stands at $4,853,892. AT&T is discounting $42,310 per month off the basic monthly charge for the first six months as a promotion.

Under Option 51, the group will receive 800 T-1 lines, 204 56K bit/sec lines and 2,573 circuits ranging in speed from 1,200 to 9.6K bit/sec.

Members of the Option 51 group may request changes to the initial network configuration, but changes must maintain 80% of the initial configuration unless AT&T approves the change.

Each customer has to define the portion of the basic charge and the minimum annual charge it will shoulder, as well as make commitments for monthly voice, data and international usage.

Users decry price plan for DEC's LanWorks for Mac

Site, usage licenses are more attractive, users say.

By Laura DiDio
Senior Editor

Some Apple Computer, Inc. Macintosh users last week said they will pass over Digital Equipment Corp.'s recently introduced LanWorks for Macintosh software because DEC's licensing policy makes the product too expensive.

DEC's LanWorks for Macintosh, introduced last month, is a set of 14 bundled software services that enables a VAX to act as a server for Macintoshes and lets Macintosh users exchange data and electronic mail with other systems on DECnets.

LanWorks also includes an X Window System capability and support for DEC's Local Area Transport protocol, which lets users bypass terminal servers to establish direct sessions with VAX hosts.

DEC has priced the software at $295 per Macintosh.

Some Macintosh users are dismayed over the pricing structure because third-party software suppliers offer more liberal site licenses and concurrent user licenses for Macintosh-to-VAX E-mail or file-sharing products. In addition, they said that under the current price structure, LanWorks is only economical for businesses with fewer than 10 Macintosh nodes.

The users said other Macintosh/VAX connectivity software — while not offering all the features of LanWorks — is more economical for large users. They added that DEC's packaging of LanWorks forces them to buy features, such as X Window support, that they do not currently need.

"The LanWorks pricing is terrible," said Paul Heckel, an internal consultant for utility services at Liberty Mutual Insurance Co. in Portsmouth, N.H. Liberty Mutual, which uses both Alisa Systems, Inc. and Pacer Software, Inc. software, was a beta-test site for LanWorks. The insurer currently has 2,000 networked Macintoshes connected to VAX hosts, and Heckel said the company expects to double that number within the year.

"It's a good product, but it would be much too expensive to switch from third-party software to DEC for just the file, print and terminal-emulation services we now use. It would cost us $600,000 for 2,000 users for services we have already," Heckel said.

Wendy McLeod, senior project leader in charge of office automation at Bank of Bermuda in Hamilton, Bermuda, agreed. The bank has 500 Macintoshes and 100 personal computers linked to a large VAX cluster. "The fact that DEC is pricing LanWorks on a per-client software basis is a big turnoff for us," McLeod said. "The pricing structure alone could eliminate it from consideration."

The Bank of Bermuda now uses PacerLink as well as Pacer file and terminal-emulation packages for file sharing on its Macintosh local-area networks.

"One of the main reasons we chose Pacer is that its licensing costs are based on [the number of] concurrent user logons; we pay as we use it," McLeod said.

John Farago, systems director at the City University of New York's (CUNY) Law School in Flushing, which has 200 networked Macintoshes, was similarly confused about DEC's reasons for pricing LanWorks on a per-workstation basis.

"Almost everyone I've spoken with at recent [DEC user] and Mac [information systems] meetings is stunned by the pricing structure," Farago said.

> DEC's packaging of LanWorks forces users to buy features they do not currently need.
>
> ▲▲▲

He explained that while CUNY's Law School is willing to evaluate LanWorks, it has no plans to switch its current complement of Pacer software products in favor of the new offering.

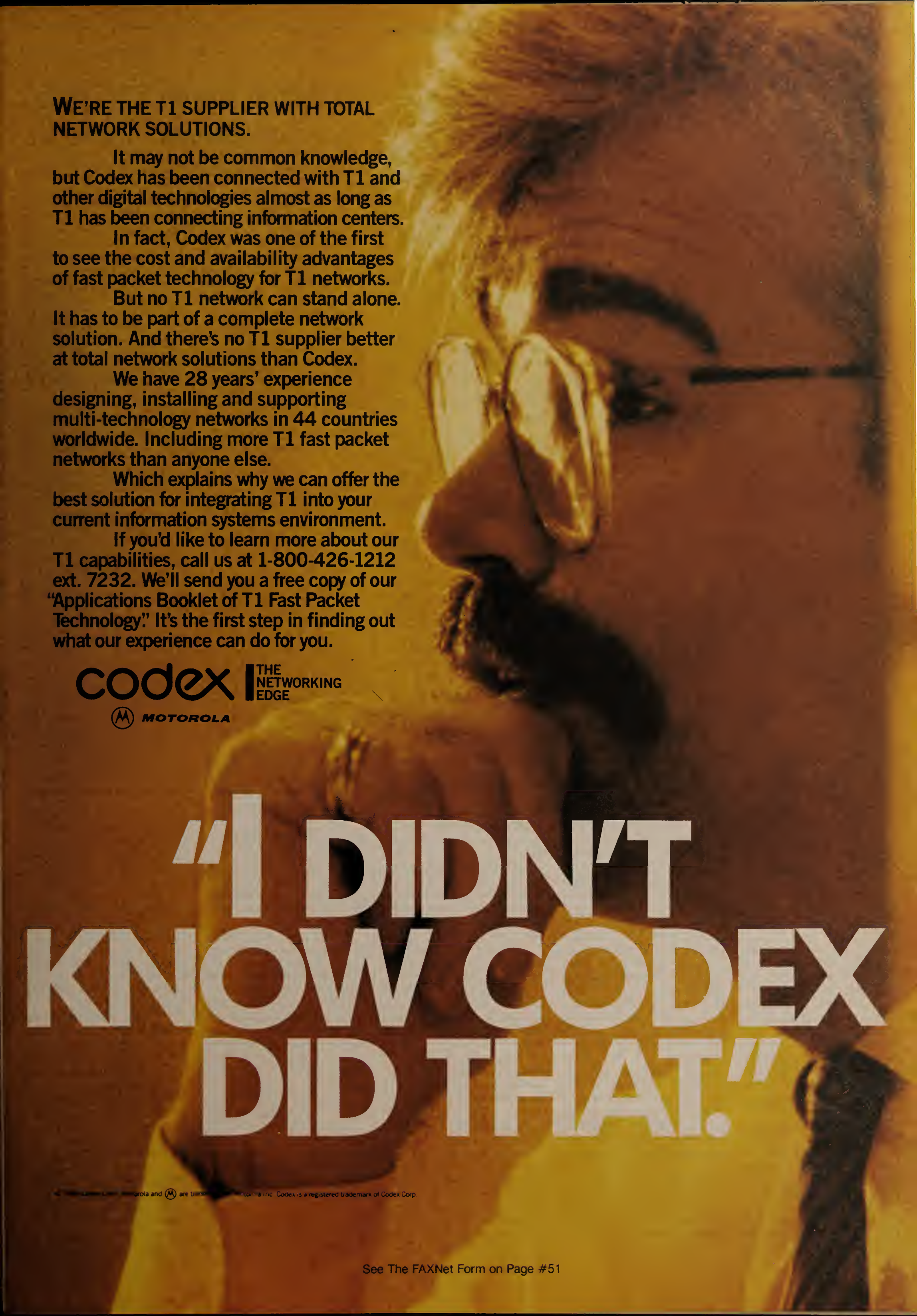
However, DEC's Katrina Holman, marketing manager of Macintosh integration in the PC Integration marketing group, said users get a lot more software for their money with LanWorks.

"Although it is unusual to license software on a client basis, I'm surprised to hear that users are upset. I've personally spoken with about 100 users, and they all say that LanWorks is a tremendous value," she said. "We're giving them about $2,000 worth of software for under $300."

Holman said that the company is sticking by its pricing policy.

"Pricing LanWorks on a per-workstation or per-client basis means that we're letting single personal computer and workstation users access multiple servers and hosts, and that allows for the most efficient use of net services and resources," Holman said.

According to Holman, DEC believes users will realize the cost benefits and economies of sharing network resources associated with DEC's pricing policy once they try LanWorks.



See The FAXNet Form on Page #51

Promised board links LANs to IDNX

REDWOOD CITY, Calif. — Network Equipment Technologies, Inc. (NET) is promising to provide a board for its Integrated Digital Network Exchange (IDNX) T-1 multiplexer that will support the direct connection of local-area networks to the IDNX.

"It's a general-purpose packet switch that can support a variety of things, including LAN interconnection, X.25 and frame relay," said David Owen, director of product marketing at NET.

The board will essentially be a LAN router that fits into the IDNX, Owen said. It will act as a LAN node and support traffic at the LAN's native speed, enabling the device to examine traffic to determine which packets should be picked off and routed through the T-1 multiplexer to remote sites.

Owen declined to say what trunk speeds the board would support, when it would be available or how much it would cost.

The board is being developed as part of NET's technology sharing agreement with cisco Systems, Inc. It consists of two main components: a high-speed packet engine and LAN interconnection logic.

"The [packet] engine that we're talking about has the ability to route several thousand packets per second," which makes it competitive with any currently available packet switch, Owen said.

The board is expected to provide more than just LAN interconnection functions, Owen said. NET is looking at market needs in other areas, including frame relay and X.25, and will add those capabilities as the market demands.

NET's proprietary board will offer higher performance than frame-relay interfaces but will work only with other IDNXs outfitted with the same device. Frame-relay implementations promise to provide multivendor interoperability by adhering to a standard.

NET is also working on capabilities that will support the dynamic allocation of bandwidth to packet-switched or circuit-switched applications as needed, so all applications could compete for the same bandwidth.

That would obviate the need to split the backbone bandwidth among dedicated voice, data and video applications. Instead, all applications would compete for a single bandwidth pool, Owen said.

NET already provides some flexibility today in bandwidth allocation, such as changing the configuration according to time of day.

— Paul Desmond

Frame-relay standard gets votes

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bits and routing data.

That improves overall throughput since data frames do not have to be routed off the backbone and through intermediate bridges and routers to determine the data's ultimate destination. It also cuts hardware costs by enabling a device to support multiple remote destinations from a single local I/O port.

NET is leaning toward supporting frame relay on its Integrated Digital Network Exchange (IDNX) T-1 multiplexer family, but the company will first offer a proprietary IDNX board that incorporates the function of a router and a high-performance packet switch. That equipment will support direct LAN connections (see "Promised board links LANs to IDNX," this page).

The company may later adapt the board to support frame relay, said David Owen, director of product marketing at NET. "It seems that frame relay is going to be an important standard, and therefore, in all probability, it's something we will do," he said.

Timeplex also acknowledges that it is working on frame-relay technology, along with other backbone-switching technologies such as cell relay, which works at speeds of 45M bit/sec and above.

"We are absolutely working on all of these technologies," said Timeplex President Dewaine Osman. Having been burned in the past by announcing products that missed their scheduled ship dates, Timeplex today is careful not to disclose its product plans too far in advance, Osman said.

AT&T Paradyne said it has done work with frame-relay technology but declined to say that means it is developing a product.

GDC also made no commitment but said the development that went into the ISDN Primary Rate Interface for its T-1 multiplexers will be helpful should it opt to support frame relay.

Racal-Milgo has already announced a bridge/router that supports frame relay but has not yet decided whether it will support the standard on its T-1 multiplexers.

Newbridge is the only traditional circuit-switched T-1 multiplexer vendor to date to announce frame-relay support. Netrix and StrataCom both already supported some type of packet switching across their backbone nodes. Codex Corp. and Infotron Systems Corp. will likely offer frame-relay support through existing OEM deals with StrataCom and Netrix, respectively.

Newbridge announced it will support frame relay through a new Distributed Communications Processor module for its 3600 MainStreet Bandwidth Manager multiplexer, according to David Helfrich, director of marketing.

The product will format data from attached LANs into the frame-relay standard and pass it unchanged over the circuit-switched backbone. With the Newbridge multiplexer, as with any other circuit-switched multiplexer, backbone bandwidth will have to be divided between circuit-switched applications, such as voice, and frame-relay applications. Analysts said this is an important difference in the way circuit-switched multiplexers handle frame-relay data as compared to StrataCom's IPX, which is based on a proprietary fast packet switching technology.

StrataCom's IPX supports both voice and data in its proprietary fast packet mode. That means users are not forced to dedicate some bandwidth to voice and some to data, and they can better utilize the available bandwidth, said David Passmore, a partner with Network Strategies, the network consulting practice of Ernst & Young in Fairfax, Va.

Because all applications compete for the backbone bandwidth, a frame-relay application can access the entire backbone when it has data to transmit, thus offering greater throughput. A frame-relay application on a circuit-switched multiplexer can only access some fraction of the total backbone bandwidth.

On the other hand, with circuit-switched multiplexers, the frame-relay application is guaranteed access to the bandwidth set aside for it. "It doesn't have to compete with the voice traffic, so you don't have to worry about lots of voice clobbering your data," Passmore said.

If the network is not correctly engineered to support peak loads, there is more risk of losing voice or data with fast packet as compared to circuit switching, but there is also more potential benefit in terms of bandwidth utilization, he said.

Circuit-switched multiplexer vendors said their products can provide those same benefits if bandwidth requirements are strategically defined, which they said is the same prerequisite for success with fast packet.

Eventually, more vendors are expected to implement backbone-switching architectures related to StrataCom's, although they will be based on emerging standards for cell-relay switching, which operates at speeds above 45M bit/sec.

US Sprint intros VPN plan, contract options, discounts

Carrier offers users slew of incentives to sign up.

By Bob Wallace
Senior Editor

WASHINGTON, D.C. — US Sprint Communications Co. recently introduced new versions of its Virtual Private Network (VPN) service, long-term contract options and volume discounts, as well as promotional discounts.

US Sprint also boosted daytime rates for on-net calls by an average of 7% and on-net to off-net calls by about 10%. But the carrier dropped rates for off-net to off-net calls an average of 3%. US Sprint established a onetime $5,000 VPN setup charge as well.

The VPN changes took effect June 1.

New VPN packages

VPN is now available in two packages, each with a group of standard and optional service features. Previously, US Sprint offered a single VPN package to all users.

Option 1, designed for low-end users, includes features such as 10-digit dialing for on-net calls and seven-digit dialing for station-to-station calls, which are direct-dialed calls between sites. Option 1 users can also take advantage of accounting codes for billing, class of service screening, international calling and three-digit speed numbers. Users can access VPN with switched or dedicated lines.

Option 1 customers can also use the VPN 56 Capability, which enables them to transmit data at 56K bit/sec over the virtual net, and the VPN FONCard feature, which lets company employees place off-net to on-net calls using the US Sprint FONCard.

Discounts available under Option 1 start at 4% for customers with $10,000 to $14,999 of monthly usage and range to 21% for users that spend more than $300,000 each month. The discounts cover on-net to on-net, on-net to off-net and off-net to on-net calls.

Volume discounts for off-net to off-net, VPN FONCard and international calls under Option 1 range from 2% for users with $10,000 to $14,999 of monthly usage to 14% for customers with more than $300,000 of monthly usage. With this plan, US Sprint has brought FONCard usage under its VPN Volume Discount.

The VPN Volume Discount is calculated on the total of all VPN intrastate, interstate and international usage. Private-line, installation and feature charges do not count toward the discount.

The Option 2 package, designed for midsize to large users, includes all Option 1 features, as well as customized dialing, forced on-net routing, route advance and forced route advance plans.

With route advance, calls that cannot be completed using VPN trunks are sent over the public net to the same site. US Sprint switches perform the necessary

(continued on page 8)

Firm promises LU 6.2 support

continued from page 4

work. Being able to access another vendor's data base using SQL is a step in the right direction, but it does not eliminate those incompatibilities, he said.

To help users write applications that support multiple vendors' equipment, Systems Center will provide a new facility called Mapped Data Structures. Users or Systems Center can create maps that define how a particular vendor structures data. A programmer can then use the maps when writing applications to bring those devices under Net/Master control.

The software will be of particular use to Open Systems Interconnection network management, Stuck said, since users could employ it to convert any vendor's data structure to the OSI Abstract Syntax Notation One specification.

Systems Center will also beef up Net/Master's control of logical software-related network entities with enhancements to the optional Net/Master Network Tracking System (NTS). Users will be able to configure NTS to collect all net management data for the network in a single location, regardless of the number of domains in the network.

Today, each mainframe in a multidomain network collects net management data for the devices in its domain. Net/Master users can log on to other domains but cannot program net management data to flow to a central location from all domains.

The NTS enhancements will remedy that and will let users define different configurations so that net management data can flow to different mainframes at various times of the day.

Systems Center also reiterated its intention to provide new configuration and change management tools, knowledge-based rules for automated operations and a personal computer-based product that helps bring up remote unmanned MVS or VM mainframes following a failure or planned outage ("Systems Center adds new capabilities to Net/Master," *NW*, April 16).

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SYSTEMS CENTER

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W-NWX-900611

Vitalink, Xyplex team up to build first remote interoperable bridges

By Bob Brown
Senior Editor

FREMONT, Calif. — Vitalink Communications Corp. and Xyplex, Inc. last week said they will work together to develop and market what they claim will be the first interoperable remote bridges from different vendors.

Vitalink also said it will submit a proposal for bridge interoperability to the Internet Activities Board's Internet Engineering Task Force this summer that will be based in part on its Vitalink Communications Protocol, a data-link layer protocol used to establish bridge connections.

Vitalink said its agreement with Xyplex will enable users to employ interoperable bridges without waiting for a standard to be established, since that could take well over a year.

Vitalink and Xyplex pledged that software upgrades to their bridges, which will be linked via the Vitalink Communications Protocol, will be made available to allow users to migrate to a standard when it is finalized.

Vitalink's proposal is intended to establish a standard data-link layer protocol for bridges that would make it possible to build internetworks with a mix of products, said Melinda LeBaron, Vitalink's senior product manager for internetwork products.

It would become an extension of an existing proposal, dubbed the Point-to-Point Protocol, for linking different vendors' routers together over wide-area networks ("Router firms rally round interoperability protocol," *NW*, April 2).

Xyplex, a Boxborough, Mass.-based maker of Ethernet local-area network communications servers, said it will design a line of remote bridges that will interoperate with Vitalink's bridges and bridge/routers. Xyplex's MAXserver 6510 Remote Bridge Card will fit into the company's communications server chassis. Xyplex said its MAXserver Remote Bridge is scheduled to begin shipping in September and will sell for less than $4,000.

Xyplex has licensed the Vitalink Communications Protocol to ensure interoperability between the two vendors' bridges. Vitalink has promised to provide network management capabilities that support Xyplex products via the Vitalink WANmanager network management system.

Vitalink and Xyplex will make joint sales calls to promote their alliance, and Xyplex will remarket Vitalink's TransLAN Ethernet remote bridge and TransPATH bridge/routers under the agreement.

Michel Guite, a vice-president at Salomon Brothers, Inc., a New York-based brokerage firm, said the agreement between Vitalink and Xyplex could give those companies "a step up on competitors." It will be important that Vitalink and Xyplex migrate to standards, however, if and when they are finalized, he said.

US Sprint intros VPN plan, discounts

continued from page 6

seven- to 10-digit number translation.

Forced route advance enables users to assign a seven-digit number to off-net sites that use switched access. The feature gives users the impression that their site is on the VPN.

With Option 2, users also get detailed billing information delivered on magnetic tape and they have the option to use Insite, US Sprint's network management system.

Volume discounts for on-net to on-net, on-net to off-net and off-net to on-net calls range from 4% for users with $10,000 to $14,999 of monthly usage to 33% for customers with usage of more than $1.5 million. Volume discounts for international calls and off-net to off-net calls range from 2% for users with $10,000 to $14,999 of monthly usage to 20% for users with more than $500,000 of monthly usage.

For Option 2 customers to receive a discount, at least 5% of their calls must be on-net to on-net.

All customers that subscribed to VPN prior to May 10, 1990, will automatically be enrolled in Option 2.

The carrier will waive the minimum usage fee and the 5% on-net to on-net call minimum for firms that select Option 2 before Sept. 1. The promotion does not apply to new customers.

US Sprint also announced new long-term billing options for VPN.

US Sprint is waiving the network setup fee for companies that sign one-year contracts not offering discounts.

Customers that bill more than $10,000 of VPN usage a month may choose the optional VPN 24-month plan and receive an additional 5% discount. Usage includes on-net to on-net, on-net to off-net, off-net to on-net, off-net to off-net and VPN FONCard calls. US Sprint is waiving its onetime $5,000 VPN setup charge for users that sign up for the one- or two-year plans.

Besides reworking its volume discount plan, US Sprint announced a series of promotions. The carrier is waiving a number of recurring and onetime charges in an effort to win new users and encourage existing customers to expand their VPN usage. These charges include the per-site, route advance and forced route advance installation charges, as well as speed number charges. US Sprint did not give an expiration date for this promotion.

INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

"Present legal and regulatory restraints constitute an 'industrial policy' weighted against deployment of new technology and particularly broadband fiber technology in the local loop."

Roy Merrills
President
Northern Telecom, Inc.
Nashville

People & Positions

Douglas Martin last week was named president of **Nynex Meridian Systems,** a joint venture formed by Northern Telecom, Inc. and Nynex Business Information Systems Co.

Nynex Meridian Systems will provide sales and service for all Northern Telecom customer premises equipment, including the Meridian SL-1 and Meridian SL-100/SuperNode. Previously, Martin was vice-president for office systems and administration at Nynex Business Information Systems.

MCI Communications Corp. named **Charles Peck** to the newly created position of director of New York metropolitan major business accounts and **Marvin Lewis** as director of MCI Northeast's National Brokerage Industry Group in New York.

Peck will be responsible for managing MCI's relationship with many of the carrier's large users in New York. Previously, Peck was vice-president of sales for Telerate, Inc. Lewis will be charged with managing MCI's relationships with many of Wall Street's leading brokerage and investment banking firms. Previously, Lewis was director of MCI corporate national account marketing.

Lewis replaces **Mort Aaronson,** who was recently named director of marketing for MCI Northeast.

Users reap benefits from strong carrier competition

Relaxed restraints worldwide lead to more options.

By Barton Crockett
Senior Editor

Dozens of countries are loosening restrictions on carrier competition and network services, giving users new opportunities to save money and deploy strategic network applications.

Users say that new regulations are increasing competition in countries such as Canada, Japan and the U.K., and paying dividends with lower prices and better service.

"Since last year, prices from [Kokusai Denshin Denwa, Ltd.] have dropped more than 15%," said Robert Rich, international telecommunications manager with Maynard, Mass.-based Digital Equipment Corp. "We've benefited from competition, and we haven't even changed carriers."

KDD, Japan's former monopoly international carrier, began seeing competition from two start-up carriers in 1989.

But as the pace of change accelerates and as users scramble to track down accurate information in countries where facts are difficult to come by, the task of managing international networks grows more complex.

"The new regulations are an enabler," said a network manager with a Washington, D.C.-based international bank who requested anonymity. "The difficult thing is just to keep pace with what's going on."

However, users are applauding new regulations that lessen restrictions on the kinds of international applications that can be run. For example, Rich said that DEC will benefit from regulatory reforms in Taiwan that will enable his firm to run international electronic data interchange applications into that country.

He said that until this year, Taiwan prohibited foreign firms from engaging in international EDI in the country, in part to maintain a trade barrier that favored domestic manufacturers.

But Rich said Taiwan is moving to drop this restriction. As a result, DEC is looking to set up an EDI network that would be used by a manufacturing plant it operates in that country that purchases semiconductors and other products from a Hong Kong-based supplier. "This will help us move forward with our strategic plan to use EDI around the world," Rich said.

(continued on page 10)

INDUSTRY BRIEFS

A **US West, Inc.** executive last week said the Department of Commerce has informed the regional Bell holding company that the U.S. government is opposed to a proposed Trans-Soviet Line fiber-optic cable project.

US West and the Soviet Ministry of Posts and Telecommunications are leading the project, first announced a year ago, a US West spokesman said. The project would link Europe, Japan and the Soviet Union via a high-speed fiber-optic cable.

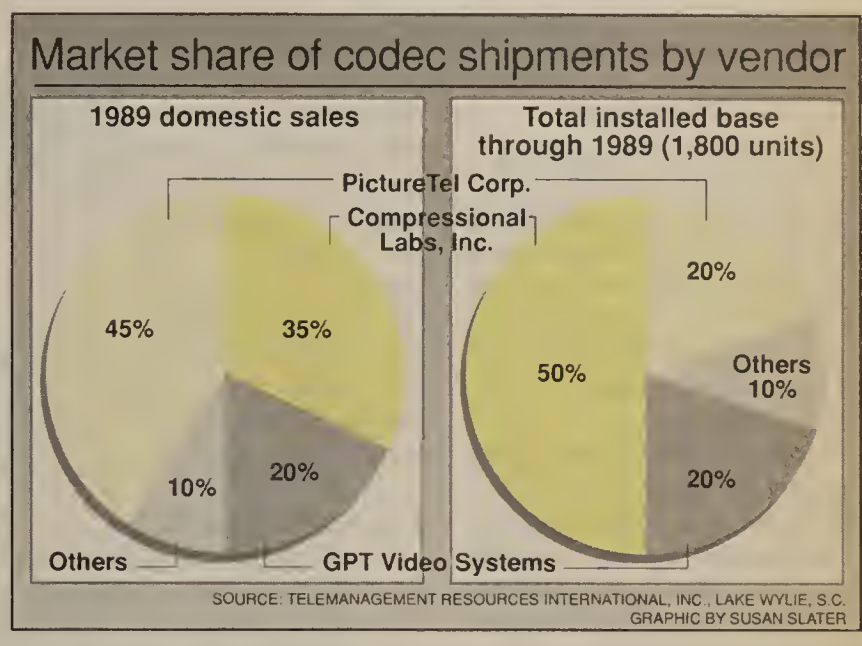
Specifically, the Commerce Department told US West that it opposes the release of any 140M bit/sec or higher telecommunications transmission technology to the Soviet Union, whether it is offered by US West or another company.

Laird Walker, US West's vice-president for federal relations, said the company will attempt to convince U.S. authorities to support the project. Other principals in the project include British Telecommunications PLC, Deutsche Bundespost Telekom of West Germany, Denmark's Great Nordic Telegraph Co. and Telecom Denmark, Kokusai Denshin Denwa, Ltd. of Japan, OTC of Australia and Societa Finanziaria Telefonica of Italy.

Western Union Corp. recently announced that it has interconnected its electronic mail system with that of **Switzerland's Post, Telegraph and Telephone** administration via an X.400 gateway.

The interconnection agreement will enable users of the Western Union 400 service and arCom 400, the Swiss PTT's X.400 service, to swap messages with each other.

Western Union previously has announced X.400 interconnections with AT&T, GE Information Services, IBM, MCI Communications Corp. and Sprint International.



SOURCE: TELEMANAGEMENT RESOURCES INTERNATIONAL, INC., LAKE WYLIE, S.C.
GRAPHIC BY SUSAN SLATER

Japanese may shake up U.S. codec market

Influx of low-cost Japanese products will likely drive down prices, spur market consolidation.

By Ellen Messmer
Washington Correspondent

U.S. videoconferencing equipment vendors are facing a confrontation with Japanese upstarts that are poised to enter the market once demand for equipment picks up.

Users can expect Japanese equipment to hit the market soon after an international standard for video coder/decoders (codec) is finalized later this year. Once a standard is in place, the Japanese will invade the market with standards-based products that undercut current vendors' equipment prices, analysts said.

Industry watchers said the competition will result in significant equipment price cuts over the next five years.

"You will have codec units under $500 before the year 2000," predicted S. Ann Earon, president of Telemanagement Resources International, Inc. (TRI), a Lake Wylie, S.C.-based management consulting firm. Currently, codecs typically sell for $30,000.

The emergence of strong Japanese competitors, backed up by parent companies with deep pockets, could also spell trouble for current market leaders PictureTel Corp. of Peabody, Mass., Compression Labs, Inc. (CLI) of San Jose, Calif., and GPT Video Systems, Inc. of London.

Although U.S. suppliers have dominated the market for both low-end (56K to 384K bit/sec) and high-end (384K to 2.048M bit/sec) codecs, only CLI and GPT have turned a profit.

Consequently, these firms are likely to find partners or sell out to other companies altogether.

Just last week, for instance, CLI announced that it is forming a partnership with Sony Corp., under which Sony's Video Conferencing and Satellite Systems Division will integrate CLI codecs into videoconferencing packages.

Although Sony has marketed CLI equipment in the Far East, the move marks the first time the firm will sell the gear in the U.S. CLI admits the deal may cause sales conflicts but said it is necessary for broader distribution.

Al Lill, a director at Stamford, Conn.-based Gartner Group, Inc., said that by 1995, he expects Japanese companies — such as Fujitsu, Ltd., Hitachi Corp., Matsushita, Inc., Nippon Electric Industry, Ltd. and Sony — will likely dominate the market for videoconferencing equipment.

"The Japanese are letting the market grow until it reaches critical mass," concurred Scott Douglas, a managing director at TRI.

User interest in videoconferencing is expected to grow significantly once the Consultative Committee for International Telephony and Telegraphy approves the new international videoconferencing standard H.261 for video codecs, which it is expected to do in November. Through 1989, only 1,800 codecs were installed in the U.S.

The H.261 standard will enable video codecs — which compress and decompress video signals for transmission over networks — to interoperate, regardless of which manufacturer produced the equipment.

Gartner Group's Lill predicted that in 1990, the videoconferencing market will double to $100 million. "It's growing at a rate of 100%," he said. "And the quality is doubling every two years."

Analysts predict future market growth will come in the low end

(continued on page 10)

Analysts question viability of Prodigy despite growth

IBM, Sears videotex venture has yet to earn profit.

By Bob Brown
Senior Editor

NEW YORK — Prodigy Services Co. has more than doubled its membership since last fall and is trumpeting the growing usage of its consumer videotex offerings, but some observers still question the company's long-term viability.

Prodigy, a joint venture of IBM and Sears, Roebuck and Co., which have invested an estimated $700 million in the company since it was launched in October 1988, has increased its membership from 160,000 members last October to 400,000 members today.

Although the service has blossomed, Prodigy has yet to turn a profit, industry watchers said. Analysts said the company may have to revamp its pricing scheme and rein in expenses if IBM and Sears expect to see a return on their investment.

The health of Prodigy is important to a range of retailers and other companies that are monitoring the venture to gauge when the time might be right to enter the consumer videotex business.

"Companies ranging from retailers like J.C. Penney [Co., Inc.] to financial firms like American Express [Co.] are potential providers of videotex services," said Robert Smith Jr., executive director of the Videotex Industry Association, a trade group for videotex equipment and service vendors based in Silver Spring, Md. "Prodigy has done very well up to now, but companies will be keeping an eye on Prodigy to see how it meets a number of challenges during the '90s."

The profit challenge

A report released this month by New York-based market research firm Jupiter Communications Co. titled "The Prodigy Report: Does The Model Work?" stated that one of the main challenges Prodigy faces is improving profitability.

"Prodigy, as it exists today, will not recover its return on investment before the year 2000," said Jupiter President Joshua Harris.

To be successful in the long run, Harris said, Prodigy should move away from its flat-rate pricing strategy to one similar to cable television, where the consumer pays a flat rate for basic service and an additional amount for premium services.

Ross Glatzer, Prodigy's senior vice-president for commercial marketing, refuted most findings in the Jupiter report. On pricing, he said Prodigy's flat-rate scheme is a fundamental piece of Prodigy's strategy to encourage users to employ its services on an unlimited basis.

The Jupiter report also stated that Prodigy would do well to trim its staff and better control expenses. Whereas IBM and Sears invested hundreds of millions to launch Prodigy, "a more bottom-line-oriented venture might have only needed $85 million to obtain similar results," the report said.

Prodigy executives refused to comment on the company's investment costs but said that the company has met internal projections for growth and has the full support of Sears and IBM.

One danger of success for Prodigy could be that retailers and banking firms that currently sell their services electronically via Prodigy might head out on their own videotex ventures, Harris said.

"Once a company like J.C. Penney sees a critical mass forming and begins to accrue significant revenue from Prodigy, it may decide to get into the consumer videotex business on its own," Harris said. It may not be in J.C. Penney's interest, for instance, to rely on Sears-owned Prodigy, he said.

While Prodigy executives are not convinced that this will happen, they said that they welcome competition in that it would increase awareness of the entire videotex industry.

Red Cross opts for MCI Vnet, 800

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — The American Red Cross has awarded MCI Communications Corp. a three-year contract for its Vnet virtual net service and 800 services to link the four Red Cross regional headquarters in the U.S.

Bill Lupinacci, director of telecommunications for the Red Cross, said the services will improve communications within the organization and enable it to deliver more complete information to relatives of disaster victims during crises.

The locations to be supported on the Vnet are headquarters in Alexandria, Va., Burlingame, Calif., and St. Louis, as well as the national headquarters in Washington, D.C., where the Red Cross network center is located.

Roughly 150 local Red Cross chapters currently using MCI service will be added to Vnet as well. The Red Cross has 2,700 local chapters in the U.S. and overseas.

The services will enable the Red Cross to use an MCI network management capability to reroute 800 calls and internal Vnet traffic around facilities downed by disasters such as earthquakes and hurricanes.

Huge numbers of calls from the public, the press and government agencies pour into Red Cross regional offices during a crisis. At that time, the Red Cross establishes 800 numbers for public contact. "If the affected area is San Francisco, and we aren't able to get calls there, we can make the San Francisco line ring at another site," Lupinacci said.

Redirecting the 800 calls also allows the Red Cross to free up staff from phone work, enabling them to perform disaster relief. The calls can then be handled by Red Cross staff in other locations.

The MCI Vnet contract marks the first time the Red Cross has conducted a competitive bidding process for its headquarters' voice requirements; for the past 109 years, the Red Cross used AT&T switched voice service.

Of the three bidders for the service — AT&T, MCI and US Sprint Communications Co. — the Red Cross selected MCI because of its "price, service offerings and knowledge of our organization," Lupinacci said.

But the Red Cross also was favorably impressed with the help given by MCI to its Western Operations Headquarters in San Francisco during last October's earthquake.

When the Red Cross lines to San Francisco were disrupted or busy, the Red Cross telecommunications staff in the Washington, D.C. Disaster Operations Center started calling a variety of long-distance carriers to seek emergency help. MCI immediately made an MCI calling card available for unlimited use. "MCI was not affected by the disaster at that time," said Mike Van Zetta, MCI's director of large accounts south.

According to Lupinacci, the Red Cross will continue to use multiple long-distance carriers as a standard practice. He said the new Vnet contract only represents about 10% of the total Red Cross voice and data needs. He added that there were many contracts still to be awarded.

Japanese shake up codec market

continued from page 9

of the market. "In 1986, less than 10% of the units shipped were low end. This year, 90% of the units shipped will be low end," Lill said. That is also where the Japanese companies are likely to attack first with low-cost products, industry watchers said.

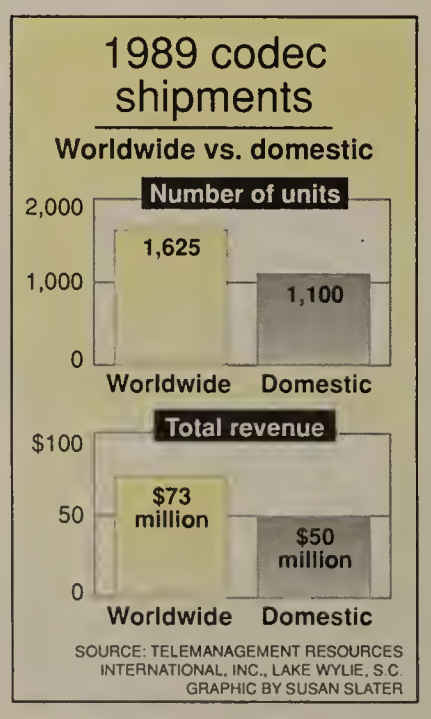
The market's two leading suppliers, CLI and PictureTel, maintain that they are ready to meet changing market demands and best any Japanese competition.

The two companies' low-end codecs, the PictureTel C-3000 at $30,000 and the CLI Rembrandt II/06 at $31,500, are software-based and are easily adapted to the H.261 standard. Lill said the Rembrandt II/06 is selling briskly, even though CLI is backlogged due to slow production.

According to Gartner Group estimates, PictureTel has shipped about $7.5 million worth of its C-3000s in the first quarter, while CLI has logged between $6 million and $7 million in orders for the Rembrandt II/06.

GPT last month introduced a proprietary implementation of an H.261-based codec, the System 261, which is priced at $51,000. The device transmits video images over 56K to 2.048M bit/sec lines. If the H.261 standard undergoes changes before its final approval, adjustments will be made, GPT said.

However, Edward Daley, division manager of GPT, whose U.S. headquarters is in Stamford, Conn., said that customers have been telling him they do not want to purchase products until a standard is finalized.



While PictureTel, CLI and GPT do not dismiss the Japanese threat, all three said they will survive and flourish, despite a market invasion.

Both PictureTel and CLI said they believe there is still room for proprietary standards because they contend proprietary systems will deliver superior picture quality.

"Standards ensure interoperability. They do not ensure uniform picture quality among vendors," said Kathy Reavis, vice-president of marketing for CLI. She said CLI's proprietary CTX standard, which is offered as a dual-mode system with H.261 in the Rembrandt II/06, is superior to the CCITT standard in picture quality. CLI introduced the CTX algorithm in March.

Reavis said the standard will accelerate market growth but that users will still want to use the proprietary standard for higher quality broadcasts.

PictureTel is ready for H.261, said Ron Baker, director of marketing at the company. "Within 30 days after it's adopted, we'll have a software product available for shipment," he noted.

Baker contends that H.261 will deliver better quality on high-end equipment than on the low end, where the Japanese are expected to focus their efforts.

"The technology is quickly emerging," Baker said. He added that the Japanese have not shown expertise in the field yet. "We're going to stay in front with the technology."

Users reap from competition

continued from page 9

Changing regulations are also causing radical price swings in some countries, forcing users to completely revamp their networks. For example, Canada's monopoly regional carriers, which also team up to supply switched and dedicated long-distance services, have proposed new tariffs that would decrease T-1 and 56K bit/sec private-line prices by more than 50%.

But also contained in the new tariff filings are price increases for interexchange voice-grade private lines and packet-switching services, as well as increases in minimum billing periods for 800 services.

Many of the changes are being proposed to position the carriers to compete with new competitors in switched long-distance services, according to Brian Callihoo, president of the Toronto-based Canadian Business Telecommunications Alliance and manager of telecommunications for the London, Ontario, brewer John Labatt, Ltd.

"Basically, every service that you would use is being affected," he said. "Users will have to go back and reevaluate everything to make sure they are positioned to compete effectively."

While they favor the regulatory changes, users complain that they make their jobs more difficult. They say changing regulations force them to make more trips abroad to negotiate with foreign regulators and to work harder to reevaluate the network services they are purchasing.

"In the current environment, six months is an eternity," said William Coopman, manager of telecommunications with Moline, Ill.-based Deere & Co. "You have to think in terms of a few weeks."

"Things are changing more this year than last year; over the next few years, the pace of change will accelerate," Callihoo added. "You know, just talking about it makes me feel guilty; I've got a lot of work to do."

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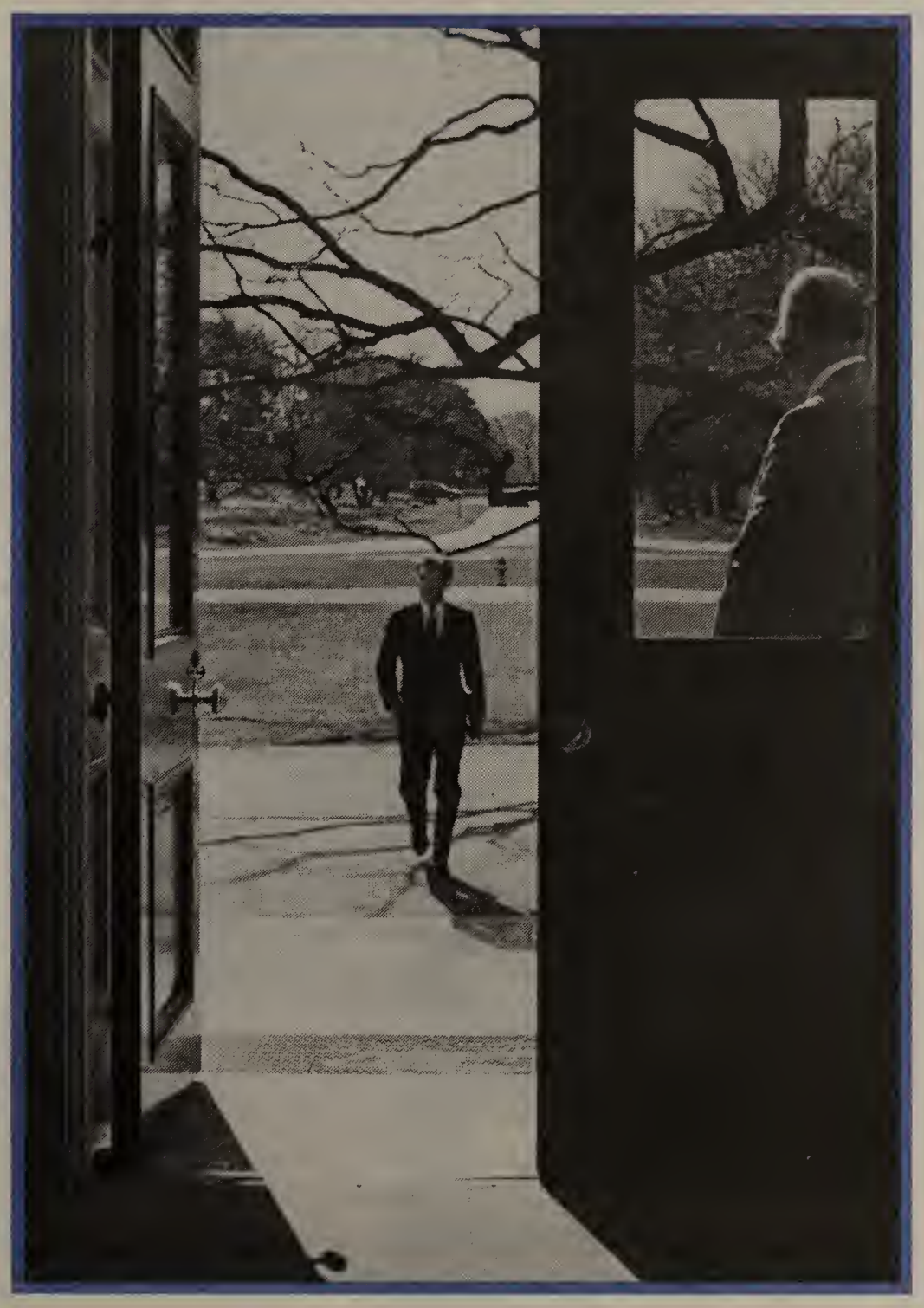

8:56 a.m.: the ROLM representative reporting to work at READER'S DIGEST World Headquarters.

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Worth Noting

"Pacific Bell would have to spend $400 million to equip its outside plant to offer ISDN to 95% of the businesses and homes in California. This includes the cost of upgrading or replacing its analog switches [63% of all Pacific Bell switches] to support ISDN."

William Morgan
President
W and J Partnership
a Morgan Hill, Calif.-based consultancy

Carrier Watch

GTE Telephone Operations recently announced discounts on interstate T-1 access lines and reduced installation and service restoral intervals for a variety of switched and dedicated services.

GTE provides the discounts on the local access portion of T-1 lines under an optional payment plan. Users that sign three-year contracts receive a 10% discount, while customers that choose five-year contracts receive a 20% discount.

GTE is initially making its optional payment plan available to customers in Tampa, Fla., and to customers in other areas later this year. The plan enables users to buy additional T-1 access lines at discounted prices at any time during the life of the contract.

In addition to introducing the optional payment plan, GTE announced new installation and service restoral intervals for a variety of services.

GTE said it will install T-1, switched access, private, 800 and WATS lines within five days after transmission facilities and network interface devices are in place at the user site and within 15 days when such facilities are not in place.

The company also set a

(continued on page 16)

Number of cities with alternative local carriers

	1987	1988	1989	1990	1991
Networks announced	3 nets in 3 cities	10 nets in 8 cities	25 nets in 17 cities	38 nets in 25 cities	41 nets in 28 cities
Cities with 2 networks	None	Chicago, Philadelphia	Chicago, Columbus, Dallas, Los Angeles, New York	Chicago, Columbus, Dallas, Los Angeles	Chicago, Columbus, Dallas, Los Angeles
Cities with 3 networks	None	None	Boston, Philadelphia	Boston, Philadelphia, San Francisco	Boston, Philadelphia, San Francisco
Cities with 4 networks	None	None	None	New York	New York

Figures for 1991 are based on announced plans.

GRAPHIC BY SUSAN SLATER — SOURCE: THE EASTERN RESEARCH CORP., PARSIPPANY, N.J.

MFS switched service bid gaining ground

Chances of getting FCC approval to compete with BOCs for switched traffic are favorable.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Metropolitan Fiber Systems, Inc. (MFS) is apparently gaining ground in its effort to compete for local switched traffic with the regional Bell holding companies, but analysts say victory will take time.

MFS filed with the Federal Communications Commission last November for permission to compete for local switched access traffic and, if successful, will offer users an alternative to the Bell operating companies.

Observers are optimistic that MFS will be granted its wish based on the high level of support expressed by carriers and users during the proceeding and the strong pro-competition stance of FCC Chairman Alfred Sikes. In addition, at least two states have granted rival carriers permission to provide switched services at the local level.

Some in the industry speculate that the FCC has placed the item on a fast track for approval.

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Today, bypass carriers primarily offer private-line services that customers use to link local sites or to access long-distance carriers. MFS claims that the BOCs have upgraded facilities and lowered prices in areas where they face such competition and that the same thing will happen if switched service competition is allowed.

The FCC has acted quickly on MFS' petition, opening an informational proceeding and inviting public comments, which has led some in the industry to speculate that the FCC has placed the item on a fast track for approval. Proceedings of this type have no time limits and can often take many months or even years.

Sikes said he prefers competition to regulation as a method of disciplining markets.

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Although he admits it is still too soon to be certain of victory, Royce Holland, president and chief executive officer of MFS, said the company has rounded the corner in its battle to provide switched access services. He said the FCC could order the RBHCs to open their networks to switched service competition by the end of the year.

Holland said MFS is encouraged that the FCC will rule in his firm's favor since the commission has acted quickly on MFS' petition. In addition to the fact that a large number of industry groups stepped forward to support the proposal, the FCC has stated that it generally supports more competition in telecommunications.

At the International Communications Association's annual conference last month, Sikes said he prefers competition to regula-

(continued on page 16)

AT&T evaluating stance on aggregators, executive says

Prefers direct sales to third-party network deals.

The industry is awash in rumors that AT&T is planning to sweep aggregation under the rug by revising tariffs, an idea seemingly supported by recent AT&T personnel changes.

Network World Contributing Editor Daniel Briere spoke recently with Michael Keith, AT&T's director of distribution strategy and alternate channels, who is responsible for developing a strategy for network service sales through both direct channels and indirect channels, which includes sales to aggregators.

Many say AT&T was genuinely surprised at the quick expansion of aggregation. Has AT&T decided to take action against aggregation?

I don't feel that there's been a radical change in our attitude; however, we are starting to evaluate how we can realign our strategies to make our products better suited to the marketplace. Our principal theme is that we believe our sales force is the way we want to reach our customers — not through service aggregators.

Why is there more aggregation today than a year ago?

Competition at the top end of the marketplace. AT&T offers product sets for the high end of the market because that's what's required to stay competitive. If we had a truly deregulated industry, we would do the same thing MCI and US Sprint are doing to sell against resellers — shape products for specific markets.

In a deregulated world, you don't have to sell to everybody. What we have in our present environment is competition that requires competitive prices in certain parts of the marketplace but regulation that requires us to offer the same product to everyone else in the marketplace. For AT&T, it's a burden we live under. It's not surprising that our attitude is constantly changing because we're always looking at the results of this and working to deal with the confusion. It's a disservice to our customers.

Have you set any sort of limits as to how far AT&T will go in terms of tolerating

(continued on page 50)

WASHINGTON UPDATE

BY ANITA TAFF

Regulations users can live with. Federal Communications Commissioner Andrew Barrett told a Virginia telephone association last week that one of the most difficult issues facing regulators is designing a regulatory framework that will ensure that users get the services they demand.

"I believe users, especially business users, have a clear idea of what telecommunications services and equipment could help business and consumers alike," he said. "The issue for regulators is how to ensure the delivery of those services by a fair, competitive market." Barrett said two of the most effective actions regulators can take is replacing rate-of-return regulation and deregulating carriers on a service-by-service basis as competition increases. He said almost 40 states have already implemented or are considering regulation similar to the FCC's price cap proposal.

Accunet moving into Mexico. AT&T last week told the Federal Communications Commission it wants to extend its Accunet T1.5 and Accunet Spectrum of Digital Services (ASDS) to Mexico. If the filing takes effect on June 19 as scheduled, AT&T will begin providing digital private-line services to Mexico at speeds ranging from 56K or 64K bit/sec to 1.5M bit/sec.

Prices for the ASDS services will vary by transmission speed, distance and fluctuations in prices for access services furnished by the carrier in Mexico. Prices for the T-1 service are based on a fixed monthly charge and a mileage charge. Circuits of up to 75 miles in length will cost $800 per month plus $10 per mile; circuits between 76 and 100 miles will cost $1,838 per month plus $9.25 per mile; and circuits over 101 miles will cost $2,038 monthly plus $7.25 per mile.

MFS switched service bid gaining ground

continued from page 15

tion as a method of disciplining markets.

"At any point where I feel competition is sufficient to [discipline the market], I will be quick to eliminate or minimize regulation," Sikes said.

Asked if that applied to allowing competition in the local loop, Sikes said he could not comment directly on the MFS petition since it is a pending proceeding but that he wants to facilitate competition in the local exchange. He added that competition for local private-line services has caused the RBHCs to do a better job of providing service.

"Without competition, network operators may prove sluggish in deploying new facilities or in honing the efficiency of their operations," Sikes said. "We have seen the positive consequences of competition in spurring investment and modernization and in broadening public choices."

Late last month, MFS filed a final round of comments, bringing the FCC's informational proceeding to an end. More than 40 users, carriers and state regulators have filed comments so far. MFS is hoping that after the FCC reviews this last round of comments, it will initiate a formal proceeding to spell out rules for the entry of competitors into switched access services.

Despite MFS' positive outlook, many observers think it will take time for the FCC to sort out all of the issues involved in opening the local loop to competition.

Nick Lippis, a principal with The Eastern Management Group, said that allowing competition for switched services is such a fundamental change in the structure of the market that it is likely to be slow in coming. "Things that shake up the Bell companies just take time," Lippis said. He likened the MFS request to MCI Communications Corp.'s efforts over the past decade to open the long-distance market to competition.

Allowing competition for switched services is such a fundamental change in the structure of the market that it is likely to be slow in coming. "Things that shake up the Bell companies just take time," Lippis said.

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Steve Sazegari, a telecommunications analyst with Dataquest, Inc., said the FCC seems to support the idea of competition in the local loop philosophically, but it will take time to work out financial issues. He said that last year, residential users paid about $300 million and business users paid around $1 billion in switched access charges.

These access charges represent a large portion of the RBHCs' total revenue. If alternative carriers are allowed to compete and they reduce that revenue, the RBHCs might have to ask for rate increases, Sazegari said.

However, if the FCC implements price caps, which restrict the amount that carriers can raise rates, it is less likely the RBHCs would be able to raise prices for access services. Implementing price caps "will give the FCC a freer hand to implement competition for switched access," Sazegari said.

The FCC is scheduled to implement price caps for the local exchange carriers on Jan. 1, 1991.

"About a year from when the price cap plan is implemented [for the RBHCS], we should anticipate serious deregulation in switched access services," Sazegari said.

Carrier Watch

continued from page 15

number of service restoral standards for switched and dedicated services. GTE will restore high-capacity digital services within 90 minutes; private-line, WATS and 800 service within three hours; and switched access services within 24 hours.

Alltel Corp., a Hudson, Ohio, based corporation that owns local telephone companies in 25 states and one long-distance carrier, recently announced the Alltel Calling Card, which enables its customers to make calls on the road. Alltel Corp. provides local phone service to 1.1 million businesses and residences, and has subsidiaries or investments in firms that provide cellular phone and long-distance service.

Southern New England Telephone Co. (SNET) last week said that it plans to file next month for its first rate increase in eight years. The company's last rate increase request was made in 1982.

SNET says it will ask the Connecticut Public Utility Commission for an average 15% to 20% increase in business and residential rates. SNET said that since its last rate increase, the cost of telephone poles jumped 21%, basic installation vans soared 37% and pay phones rose 55%.

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See The FAXNet Form on Page #51

DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

"We should be recycling bits, not paper."

Kenneth Olsen
President
Digital Equipment Corp.
Maynard, Mass.
Speaking about the need to use electronic data interchange

Data Packets

Continuing a string of recent X.400 interconnection agreements, **Infonet** last week said it will link its X.400-based Notice 400 messaging service with Touch Communications, Inc.'s Worldtalk 400 software.

Worldtalk 400 is a gateway that links a variety of local-area network-based electronic mail packages to X.400-based services. The agreement will enable Worldtalk 400 users to exchange E-mail with non-Worldtalk 400 users via Notice 400.

Two weeks ago, Infonet announced an X.400 agreement with Consumers Software, Inc.

Hybrid Fax, Inc. is expected to unveil a facsimile machine at PC Expo in New York this week that can print pages using laser printer technology.

The Menlo Park, Calif.-based company's JetFax Concorde employs the same technology as a laser printer or photocopier to print incoming fax messages on plain paper. Other fax machines use specially treated thermal paper or other forms of image transfer technology to print incoming messages.

Priced at $2,695, JetFax Concorde can only receive incoming Group III fax messages.

It can create multiple copies of incoming messages and make sure each copy is in the proper page order.

The unit also includes 1M byte of memory that supports a fax mailbox feature. With the feature, incoming messages are stored until an authorized user enters print commands from the unit's keypad.

X.400 to help VA shed its proprietary E-mail systems

VA unit launches X.400 migration with hospitals.

By Paul Desmond
Senior Editor

WASHINGTON, D.C. — The Veteran's Health Services and Research Administration (VHSRA) is launching a migration to the OSI X.400 electronic mail protocol as a means to support message transfers among its 170 hospitals and sister groups within the Department of Veterans' Affairs (VA).

VHSRA today has a homegrown proprietary mail system that supports communications among VA hospitals over Sprint Data Group's public packet-switched network. That system, however, is only linked to a limited number of other VA departments, many of which use different proprietary E-mail nets.

Gradually, X.400 is expected to replace those proprietary systems altogether as VHSRA aquires new systems and software that conform to the Government Open Systems Interconnection Profile specifications, which include support for X.400.

Adherence by different departments to the X.400 standard will obviate the need to build and maintain scores of links between proprietary E-mail systems, said Dave Bradley, systems analyst at VHSRA.

"Communications between any departmental system is simplified because we're all working to one common denominator," Bradley said. "We don't have to develop specific interfaces to all these different groups."

Among those groups are various agencies within the VA, such as the Office of Facilities, Veterans' Benefits and the VA Central Office, which includes all of the VA department officials. Each of those groups tends to have its own proprietary E-mail system that supports communications within the group but not necessarily to other departments, unless a vendor-specific gateway has been installed.

Another way interdepartmental links are supported today is through a Simple Mail Transfer Protocol (SMTP) gateway on VHSRA's E-mail system, dubbed Mailman. Mailman, which supports some 16,000 users, was developed by VHSRA using MUMPS, a programming language widely used in the medical arena.

Mailman is modeled after SMTP, the Transmission Control

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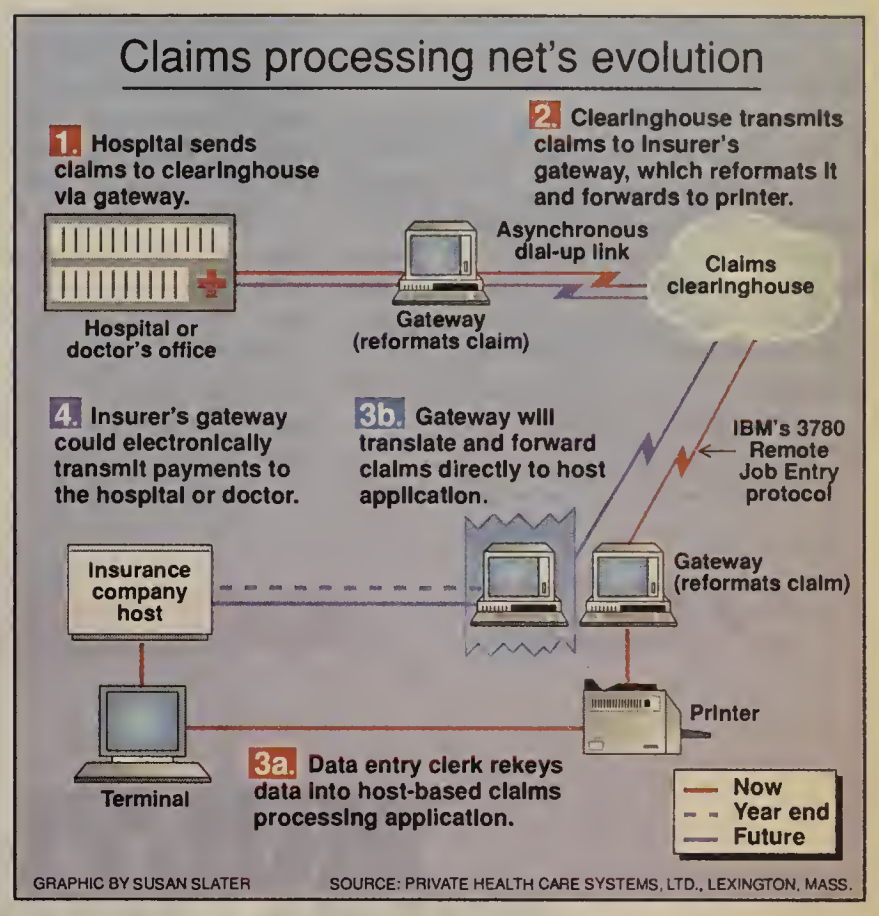

Net upgrade to ease claims processing

Private Health Care Systems moves to eliminate rekeying of claims into insurers' in-house systems.

By Tom Smith
New Products Editor

LEXINGTON, Mass. — Private Health Care Systems, Ltd. (PHCS) is upgrading gateways on its electronic claims submission (ECS) network to obviate the need for some users to rekey information into their claims processing systems.

The move would make it possible for participating insurers to lower their claims processing costs and shorten the claims payment cycle, both of which could lure more providers into the preferred provider organization health plans offered by the firm.

PHCS, composed of 17 insurance companies, provides the ECS net to more than 420 hospitals and 35,000 physicians in the U.S. Those insurers include CNA Insurance Companies, General American Life Insurance Co. and Great-West Life Assurance Co.

Preferred providers agree to be reimbursed at negotiated fees. Insurance companies encourage preferred provider organization subscribers to use participating providers by offering greater benefits.

Under the current ECS net setup, health care providers — such as doctors or hospitals — are required to install a modem and a microcomputer-based gateway, which translates patient accounting information into a format that can be understood by a regional or national clearinghouse. Claims are sent to the clearinghouse, which aggregates claims from multiple health care providers and groups claims for specific insurers.

Those claims are then routed to participating insurance companies through gateways that translate them into a standard text format and then print them out once they reach the insurer, whose claim processing system typically uses a different text format. Consequently, the claims must be rekeyed into the insurer's mainframe by a data entry clerk.

"Technologically, what we're doing here is not really rocket science," said Robert Nelsen, director of information services for PHCS. "ECS uses existing technologies that have been successful in other applications."

According to David Frione, senior business analyst at PHCS, the company is now bolstering its existing gateways to eliminate the costly, time-consuming and er-

(continued on page 20)

"Technologically, what we're doing here is not really rocket science," Nelsen said.

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Survey finds T-1 lines are carrying more data traffic

By Jim Brown
Senior Editor

LA JOLLA, Calif. — Users are increasingly mixing more data with voice on their leased T-1 circuits or simply dedicating entire T-1 lines to data traffic, according to a Computer Intelligence survey released last week.

The survey of about 10,000 users in companies with 200 or more employees found that half of the installed leased T-1 circuits are now supporting at least some data transmission. This is up from only 18% in 1986, when T-1s were used to support mostly voice traffic.

The shift is due in large part to the fact that users are leasing more T-1 lines to support their data needs and off-loading some voice traffic to less expensive switched voice services.

The survey found that 18% of all leased T-1 circuits support data only, while 32% support data and voice. The remaining 50% support voice only. A similar survey in 1986 found that just 6% of T-1 lines supported data only, while 12% of the links supported both voice and data. The remaining 82% of T-1 circuits supported voice only.

"It's rare that you see such a dramatic shift in an installed base," said Bruce Coughran, a Computer Intelligence analyst.

When T-1 was first made available to end users in the early 1980s, voice transmission was the largest application. But users soon found T-1 technology suitable for such high-bandwidth data applications as local-area network interconnections, videoconferencing and IBM mainframe channel extension.

"All of those high-bandwidth applications have only emerged in the last few years," Coughran said. "There has always been a lot of talk about these applications taking off, but here is some evidence that people are actually using T-1 links to support high-bandwidth applications."

Coughran said users ex-

(continued on page 20)

X.400 to help VA shed E-mail systems

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Protocol/Internet Protocol E-mail standard, although it does not run over TCP/IP nets. Instead, it runs across Digital Equipment Corp.'s DECnet.

Today, VHSRA is building a prototype X.400 gateway, dubbed Forum, using DEC's Message Router X.400 Gateway software running on a MicroVAX. By August, VHSRA intends to have completed testing the prototype and installing a production version of Forum at its information center here. Forum will then convert proprietary Mailman messages into X.400 for transmission to various other VA departments, Bradley said.

VHSRA's long-term goal is to support X.400 internally at each of its hospitals. That would let each hospital communicate directly to any other X.400-based E-mail system or gateway, instead of routing all messages through Forum.

Along with the support for X.400 comes the need for some type of directory to track user names and addresses systemwide, as opposed to the local directories VHSRA now uses.

"We are looking at X.500 and how we can map our existing user files and domains into the X.500 schema," Bradley said. The schema is the portion of the OSI X.500 directory protocol that defines the attributes of each directory entry and gives users the ability to adapt entries to meet their own needs.

Net upgrade to ease claims processing

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ror-prone process of rekeying data (see graphic, page 19).

Each gateway consists of software running on an Intel Corp. 80386-based personal computer, Nelsen explained. The software's communications layer supports all variations of the IBM 3780 remote job entry protocol used by the clearinghouses.

Expert system used

An expert system component installed on the gateway will enable users to define the data field used by the clearinghouse and the insurer's claims processing system. The expert system will then generate code that performs the necessary format translations.

The ECS enhancements promise to slash between $1.50 and $3.50 off the cost of processing every claim. At that rate, if the approximately seven million people covered by PHCS insurers each file four claims annually, for a total of 28 million claims per year, PHCS partners could save $42 million to $98 million per year.

To realize these savings, however, PHCS insurers would have to receive all claims electronically, but Nelsen said only about 10% of PHCS' participating hospitals and 4% of its physicians use ECS.

But once the expert system is installed on the gateways, hospitals and physicians will have an added incentive to file electronically. With the gateway enhancements, ECS will slash the time it takes to pay health care providers.

"In 1989, the average accounts receivable for the hospital industry was about 70 days, and the average accounts payable was about 40 days" Frione said. "This forces hospitals to dig deeper into their pockets to come up with those operating expenses."

Despite the currently limited level of acceptance, PHCS officials are looking forward to a third ECS network phase under which insurers can electronically return claims payments and processed claims, further enhancing their competitive position.

The gateway's communications layer could, for instance, be modified to support electronic funds transfer. "If the business case is out there, I think that PHCS can support it technologically," Frione said.

With the gateway enhancements, ECS will slash the time it takes to pay health care providers from as long as two months to less than a week.

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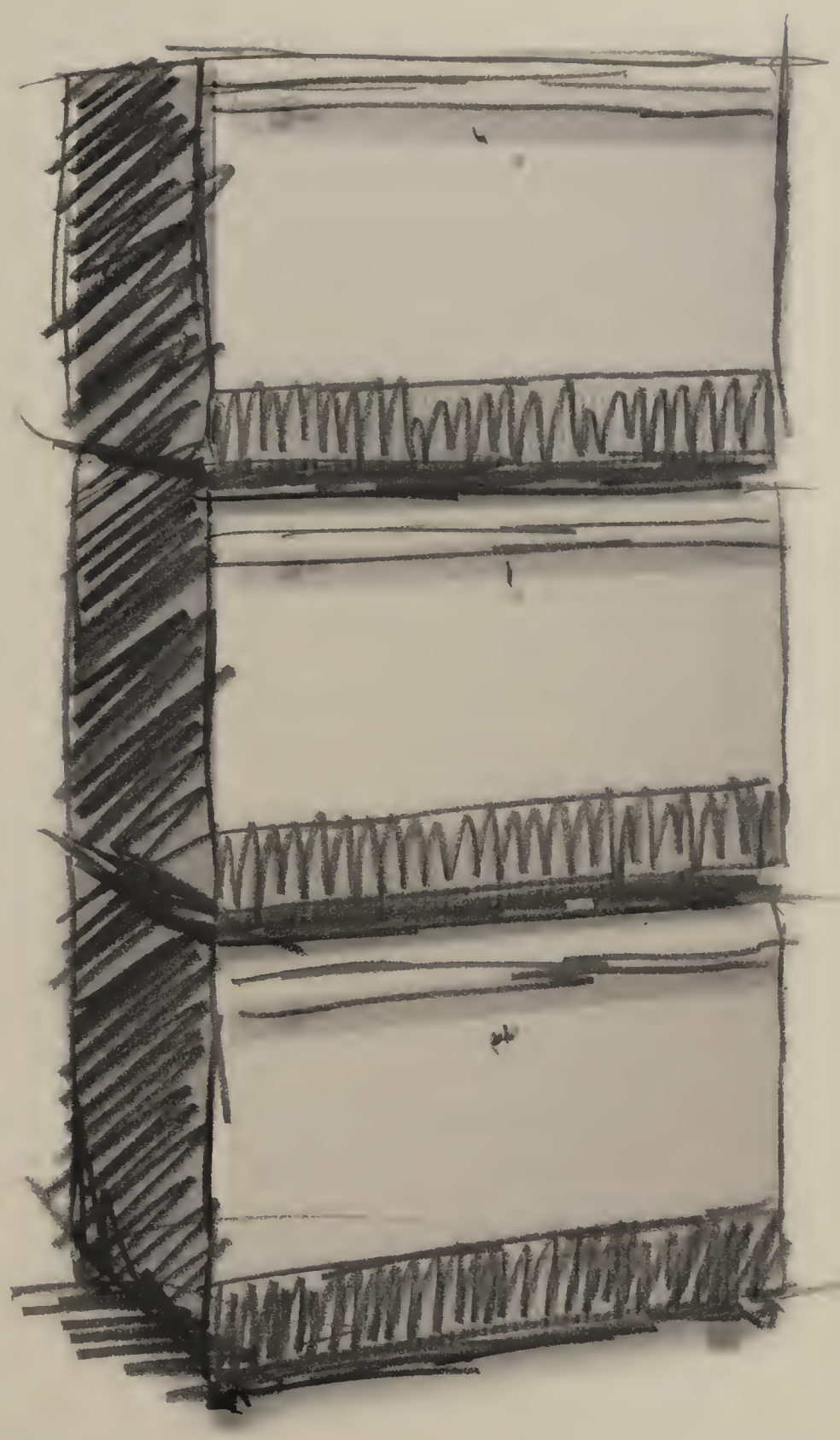
T-1 lines carrying more data traffic

continued from page 19

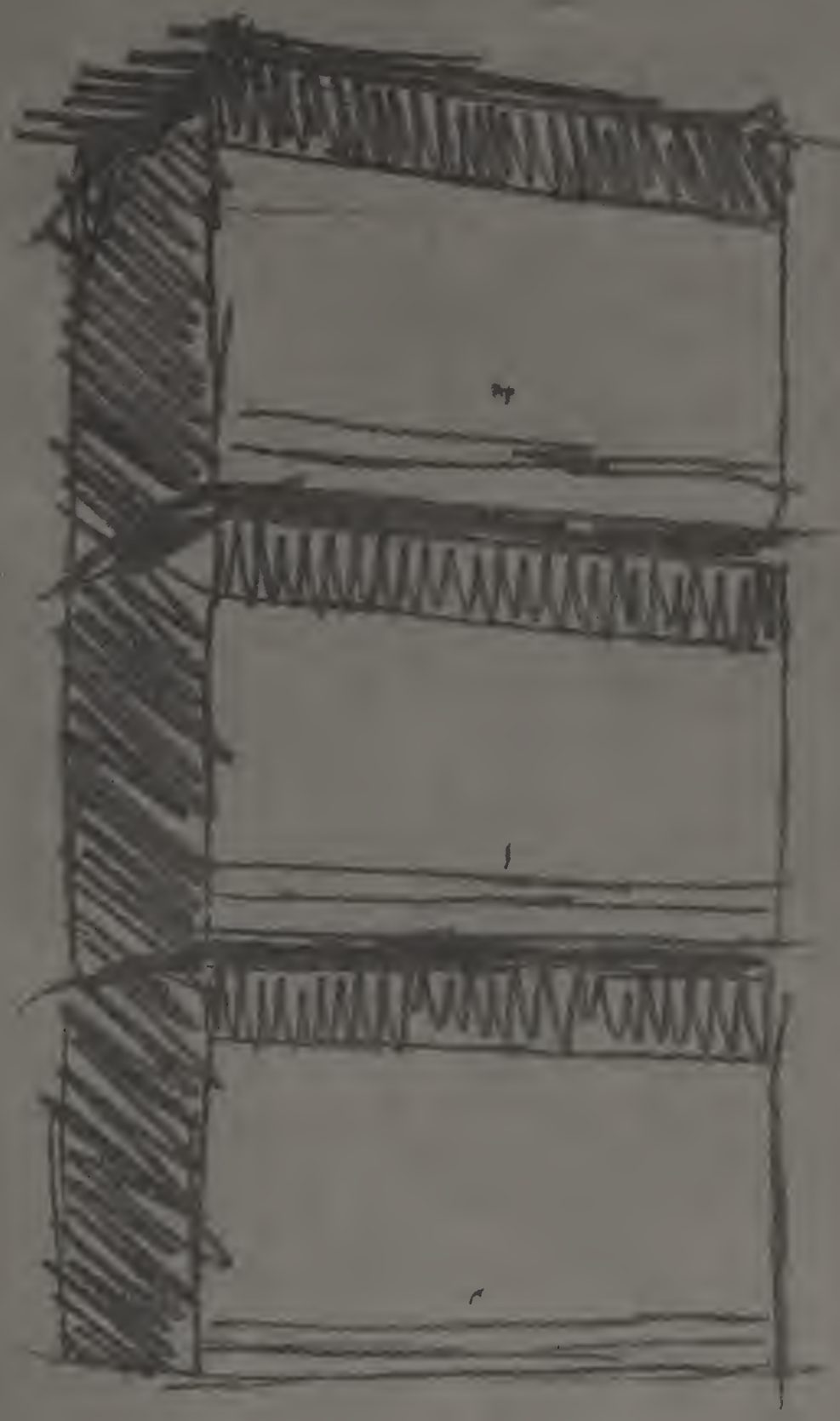
pressed plans to further increase the number of T-1 lines supporting data over the next 12 months. According to the survey, users project that by 1991, 23% of all their T-1s will support data, 35% will support a mix of data and voice, and 42% will support voice.

In a separate survey of 16,000 user sites — including large and small companies, universities and federal government agencies — Computer Intelligence found that 9% of large company sites have data-only T-1 links, while 16% of the sites have T-1 links supporting data and voice. Smaller companies reported that 4% of their sites have data-only T-1s and 6% of their sites have T-1s supporting voice and data. The survey found that 10% of university sites have data-only T-1 lines, while 5% have T-1s supporting voice and data. Lastly, it stated that 8% of federal government sites have data-only T-1s, while 5% have T-1s supporting voice and data.



How everyone else gets their great ideas.

How everyone else gets their great ideas.



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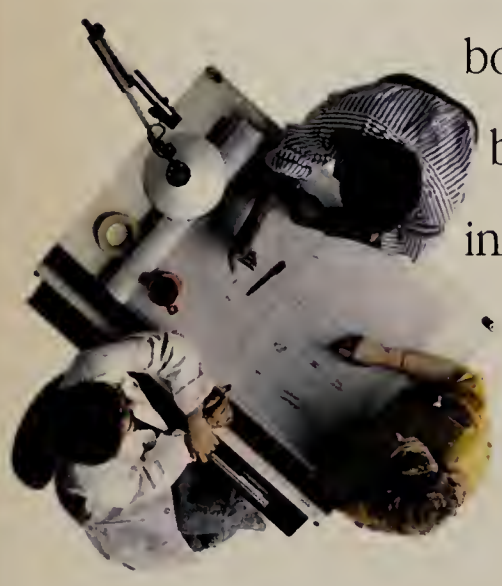

AT&T designers built critical ISDN technology into the system.

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Worth Noting

"Connecting to a high-speed FDDI network via a poorly designed adapter is like bringing an eight-lane superhighway to your front door via an unpaved gravel driveway; the car or data packets will be wrecked before they can make it to the highway or network."

Ron Perloff
President
XLNT Designs, Inc.
San Diego

Netnotes

SynOptics Communications, Inc. recently released a new wiring concentrator module that supports thin coaxial cable in star-configured Ethernet local-area networks.

The Model 3301 plugs into SynOptics' LattisNet System 3000 wiring concentrator and can be mixed in a single System 3000 along with the company's existing modules for unshielded twisted-pair and fiber-optic media.

The module is supported by LattisNet's network management system and Simple Network Management Protocol Ethernet agent.

Each Model 3301 board has eight BNC ports for RG-58 coaxial cable connections and a set of LEDs that indicate module and port status. Each of the eight thin-net segments can support as many as 30 daisy-chained station attachments and can be up to 185 meters in length.

The module costs $1,795.

SynOptics can be contacted at 501 E. Middlefield Road, Mountain View, Calif. 94043; (415) 960-1100.

Standard Microsystems Corp. (SMC) has released SMC Turbo II drivers that it claims can more than double Arcnet board performance in local-area networks running Novell, Inc.'s NetWare net-

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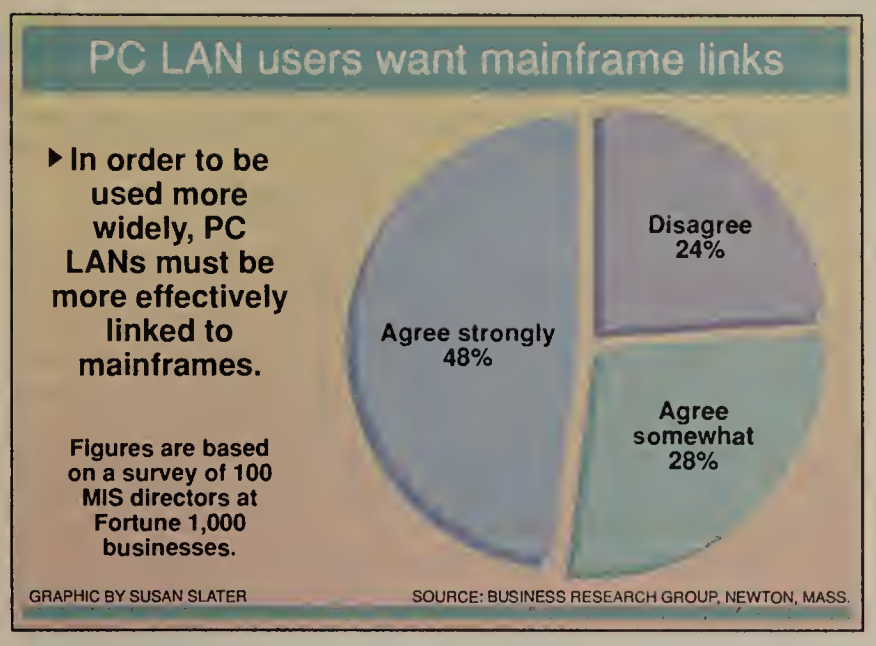

DCA token-ring interface supports MCA, ISA buses

Board works with both 4M and 16M bit/sec nets.

By Susan Breidenbach
West Coast Bureau Chief

ATLANTA — Microcomputer-to-mainframe pioneer Digital Communications Associates, Inc. entered the token-ring market at Comdex/Spring here last week with its announcement of a dual-speed 4M/16M bit/sec network interface.

Called IRMAtrac, the device is a "convertible" board with an edge connector for IBM's Micro Channel Architecture (MCA) bus on one side and a connector for the industry-standard architecture (ISA) bus on the other. This enables users to purchase and stock a single item for both MCA and ISA machines.

Additional flexibility is provided by the two replaceable Ring Interface Modules (RIM) that are included with each board. One supports shielded twisted-pair cable, and the other supports unshielded phone wire. DCA is also developing a fiber-optic RIM.

"Our board has more options than IBM's 16M/4M token-ring adapter, but we're selling it for the same price — $895," said Chris Carter, DCA senior product manager in charge of the IRMAtrac.

Challenging IBM

DCA is entering a market that is dominated by IBM. According to estimates based on the number of token-ring chipsets sold to manufacturers of IBM-compatible boards, the computer giant owns as much as 90% of the market, with numerous compatibles manufacturers, such as Madge Networks, Ltd., Proteon, Inc., and Western Digital Corp., fighting over the remaining 10%.

Carter said DCA expects to fare better than other IBM competitors because of its huge installed base of Irma boards in major accounts.

The IRMAtrac can act as a bus master in MCA and ISA machines. A proprietary DCA chip on the board can sense whether a host ISA machine supports bus mastering, and it automatically puts the adapter in non-bus-master mode if it does not support it.

Bus mastering enables a board to take direct control of the bus, bypass the central processor and speed up the transmission of data across the bus.

The board has a 128K-byte memory buffer for downloading microcode, including 802.2 Logical Link Control (LLC) software. The LLC code is processed by an on-board TI 380C16 communica-

> Carter said DCA expects to fare better than other IBM competitors.
>
> ▲▲▲

tions chip, freeing up the host system's CPU to perform other tasks.

According to Carter, customers beta-testing the IRMAtrac reported "seeing a 25% to 30% performance improvement over their existing token-ring products," which for the most part are IBM boards.

IRMAtrac is scheduled for shipment this fall. Priced at $895, it comes with drivers for Novell, Inc.'s NetWare 2.1X and NetWare 386; 3Com Corp.'s 3+Open; DCA's 10Net Plus; IBM's PC LAN Program, OS/2 Extended Edition and LAN Server; and Microsoft Corp.'s LAN Manager.

Proteon introduces multiprotocol router

Low-cost device supports Ethernet, token-ring LANs and long list of industry-standard protocols.

By Laura DiDio
Senior Editor

WESTBOROUGH, Mass. — Proteon, Inc. last week introduced a low-cost multiprotocol bridge/router capable of interconnecting 4M/16M bit/sec token-ring and 10M bit/sec Ethernet networks over a 16M bit/sec token-ring backbone or wide-area links.

The new p4100+ Bridging Router is a 20-MHz four-slot 80386-based device that can perform bridging, routing or simultaneous bridging and routing of as many as four Ethernet and token-ring local-area networks.

Its source routing and bridging capabilities enable local and remote 4M/16M bit/sec IBM Token-Ring Network users to access other LANs. The spanning tree bridging function lets terminals such as Digital Equipment Corp. VT-100s, VT-220s and VT-320s connect to DEC VAX hosts across local and remote Ethernets.

The p4100+ offers multiprotocol 16M bit/sec bridge/routing at one-third to one-half the price of existing 4M bit/sec routers, according to Diane Rahe, Proteon's manager of product marketing.

At less than $10,000, Rahe said, the p4100+ delivers four times the performance of 4M bit/sec token-ring routers that cost from $15,000 to $24,000.

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Net management product tracks files across LANs

By Susan Breidenbach
West Coast Bureau Chief

ATLANTA — XTree Co. last week at Comdex/Spring here released a new version of its XTree file management software designed specifically for local-area networks running Novell, Inc.'s NetWare.

XTreeNet 2.0 is a DOS program that runs on the network administrator's workstation and provides access to both the local hard disk and the disk on the server. A new peer-to-peer communications feature also enables the administrator to view and manipulate files on the local drives attached to all user nodes.

Files are displayed in a graphical tree that facilitates their manipulation by the administrator.

"For the first time, files on distant workstations can be copied, deleted and edited from one location, thereby giving the administrator unparalleled distributed file management capabilities," said Michael Chuises, network product manager for XTree. "Instead of running from machine to machine, the administrator can manage the entire network from his desk."

XTreeNet 2.0 has enhanced searching abilities that let users search for files by specifying a sequence of characters. Files that match the search criteria are tagged and can then be viewed, copied or subjected to other file management operations. If the operation requires the application associated with the file to be loaded, XTreeNet 2.0 will do so automatically.

The new version of the product also has an ARCHIVE command that converts files to the industry-standard .ARC file-compression format. This feature can be used to save time and disk space when transferring files to disk or downloading them from some outside source via modem.

There are also new PRUNE and GRAFT commands that enable users to move or delete entire directory tree structures as easily as single files can be manipulated.

Chuises said XTreeNet 2.0 enhances NetWare's security features by enabling the administrator to restrict the use of various XTreeNet commands to certain individuals or groups. When a user calls up a display of files stored on the network, only the directories and files to which that user has access rights will be displayed.

XTreeNet 2.0 is available in two versions: one for Entry Level System (ELS) NetWare and the other for NetWare 2.0a and higher, including NetWare 386. The former costs $249, while the latter is priced at $495. Registered users of X.TreeNet 1.0 can upgrade to either version for $95.

XTree can be contacted in writing at 4330 Santa Fe Road, San Luis Obispo, Calif. 93401, or by calling (805) 541-0604.

TCNS token-bus network a low-cost option to FDDI

By Susan Breidenbach
West Coast Bureau Chief

ATLANTA — At Comdex/Spring here last week, Thomas-Conrad Corp. introduced a proprietary 100M bit/sec token-bus network that offers users a low-priced alternative to Fiber Distributed Data Interface local-area networks.

The Thomas-Conrad Networking System (TCNS) can be purchased for as little as $1,281 per node, which compares with a per-node pricing of approximately $5,000 for FDDI networks. TCNS supports as many as 255 nodes over a maximum distance of 5,000 feet and allows a span of up to 5,000 feet between devices.

The product is aimed at specialized work groups using applications requiring high network bandwidth, such as accounting, imaging and computer-aided design.

It can also be used as a backbone connecting any type of LAN segment, including Arcnet, Ethernet and token ring, as long as the network operating system supports internal bridging.

Thomas-Conrad said TCNS is now in a "phased beta release" stage, with volume shipments to begin in August.

"The response we are getting has just flabbergasted me," said Walter Thirion, president of Thomas-Conrad. "I didn't expect this much interest for at least six months. We've had to start turning away prospective beta sites."

One beta site is a chemical company that has standardized on token ring but needed higher throughput for a work group handling an image-document management application. "The LAN originally had 18 nodes, but with TCNS, they've been able to increase the size of the work group and [they] expect to be able to support 100 nodes eventually," Thirion said.

Many of the beta sites are current Arcnet users, and for them, the upgrade is particularly easy. Thomas-Conrad designed TCNS to support all the Arcnet drivers currently in use in various releases of Novell, Inc.'s NetWare, Banyan Systems, Inc.'s VINES and Network Basic I/O System-based network operating systems. Users simply have to swap the Arcnet hardware for TCNS boards and hubs.

Thirion said the support of existing Arcnet drivers that have "been debugged and working for years" is something FDDI will not be able to offer. "FDDI requires an entirely new set of drivers, and new driver development is a pain; it's always lagging behind new hardware and system software releases.

"And you can afford to put TCNS on every desk," Thirion said, adding that most of the beta users are interested in doing just that, rather than employing TCNS as a high-speed backbone.

Thomas-Conrad is positioning TCNS as an alternative to FDDI that is more specialized and should be able to out-perform FDDI in most work group applications.

FDDI is based on token ring, which requires that packets sent from one station to another pass through all nodes in between. By contrast, TCNS uses a token-bus topology that provides a more direct path between the sending and receiving nodes.

The eight-port TCNS is priced at $2,295. There are three board options: an eight-bit model priced at $995, a 16-bit board for $1,495 and a 32-bit Extended Industry Standard Architecture board for $1,795.

Thomas-Conrad Corp., 1908-R Kramer Lane, Austin, Texas 78758; (512) 836-1935.

Proteon intros router

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"Until now, it's been both technically difficult and cost-prohibitive to bridge/route commercial IBM Token-Ring Nets with multiple types of networks and protocols," Rahe said.

Susan Frankel, an analyst in the LAN program at International Data Corp. (IDC) in Framingham, Mass., agreed. She said Proteon is the only company currently offering an IBM source routing bridge over a 16M bit/sec token-ring backbone. And only cisco Systems, Inc. supports as extensive an array of network protocols, she said.

"From a technology standpoint, the p4100+ is a very impressive, solid product," Frankel said. "No other company offers this depth of features and functionality in a single device."

IBM, for instance, doesn't offer a Token-Ring-to-Token-Ring router. The current 8209 Router only interconnects Ethernet and Token-Ring LANs, and it does not route Novell, Inc. NetWare Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX) protocols. NetWare users represent more than 50% of the installed base of personal computer LAN users, and many of them are on IBM Token-Rings.

By contrast, the Proteon p4100+ simultaneously supports IBM source routing protocols, as well as NetWare IPX/SPX, Digital Equipment Corp.'s DECnet, Xerox Corp.'s Xerox Network Systems (which is commonly used in 3Com Corp. nets), Apple Computer, Inc.'s AppleTalk, Hewlett-Packard Co.'s Apollo Division Domain, Transmission Control Protocol/Internet Protocol and Open Systems Interconnection protocols.

"Users are installing more and more heterogeneous networks," Rahe said. "And the multiprotocol routing capabilities of the p4100+ are designed to address the wide variety of interconnection protocols users have installed at their sites."

> "From a technology standpoint, the p4100+ is a very impressive, solid product."
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The p4100+ also supports a variety of physical media types, including fiber-optic cable and shielded and unshielded twisted-pair wiring.

"Our 16M bit/sec backbone uses the same type of fiber-optic cable as FDDI, so users will be able to preserve their current cabling investment if they decide to migrate to FDDI," Rahe said.

Wide-area links

The p4100+ supports wide-area bridge/routing over 64K bit/sec and T-1 lines and X.25 networks. It also supports the industry-standard Simple Network Management Protocol for network management.

Analysts said they expect Proteon to follow the example of rival cisco Systems and incorporate its routing technology into its Series 70 Intelligent Wire Center. Cisco Systems recently signed agreements with both SynOptics Communications, Inc. and Cabletron Systems, Inc. to integrate its router technology into those companies' intelligent wiring hubs.

"Proteon has all of the technology at its fingertips to do the same thing internally, and I think it's a logical move for them," IDC's Frankel said.

The p4100+ Bridging Router is scheduled to ship in August. Pricing ranges from $6,995 for the base platform with two 4M/16M bit/sec token-ring adapters and IBM source routing software to $9,995 for a fully configured system that includes two 4M/16M bit/sec token-ring adapters, an Ethernet adapter, one serial line interface as well as NetWare IPX/SPX and IBM source routing software.

Netnotes

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work operating system.

The drivers operate under NetWare 2.1X or higher, including NetWare 386.

According to SMC, they can boost network throughput by as much as 127% over Novell's standard RX-Net drivers when the server is equipped with SMC's 16-bit Arcnet board.

The drivers are interoperable with LAN boards conforming to the original RX-Net specification and those using the new Arcnet packet header definition standard.

The drivers come on a diskette that includes a menu-driven installation program. They are now packaged with SMC's PC500FS, PC550FS, PS110 and PS210 Arcnet adapters, and current users of these boards can download the drivers at no charge from the SMC Forum on CompuServe, Inc.'s CompuServe network.

SMC can be contacted at 35 Marcus Blvd., Hauppauge, N.Y. 11788; (516) 273-3100.

IMC Networks Corp. recently jumped into the 10BaseT market with the release of a line of aggressively priced Ethernet boards based on the IEEE draft standard.

The products, the latest members of IMC's PICnic local-area network adapter family, include 16-bit and eight-bit net interfaces for personal computers based on the industry-standard architecture (ISA), and a 16-bit adapter for machines using IBM's Micro Channel Architecture (MCA).

Workstation adapters with 16K bytes of memory are priced at $275 for the eight-bit ISA version, $325 for the 16-bit ISA model and $375 for the MCA board. File server adapters with 64K bytes of memory list for $350 for the ISA version and $375 for the MCA version.

IMC can be reached at 1342 Bell Ave., Suite 3E, Tustin, Calif. 92680; (714) 259-1020.

Cabletron Systems, Inc. and **cisco Systems, Inc.** recently announced a technology alliance that will enable cisco System's network routers to be integrated into Cabletron's family of Multi-Media Access Center (MMAC) intelligent wiring hubs.

The two firms will exchange specifications on their respective products to let cisco Systems engineer its router to be fully interoperable with Cabletron's MMAC intelligent wiring hubs, according to Chris Oliver, Cabletron's director of engineering.

"This deal will provide our users with the first router technology for the MMAC hubs," Oliver said.

Cabletron's MMAC hub is an eight-port device that supports connections to 168 users on Ethernet and token-ring nets.

The cisco Systems router for Cabletron is scheduled to be available this December and will be marketed and sold by both companies.

Cisco Systems also has OEM deals with SynOptics Communications, Inc. and Chipcom Corp. Neither cisco Systems nor Cabletron has set a price on the forthcoming router.

Cabletron is located at 35 Industrial Way, Rochester, N.H. 03867; (603) 332-9400. Cisco Systems can be reached at 1525 O'Brien Drive, Menlo Park, Calif. 94025; (415) 326-1941.

Emerson Computer Power, Inc. recently announced a new local-area network interface that provides an intelligent link between an Emerson uninterruptible power supply unit and a LAN file server.

The new product can prolong battery life during a power outage and display on the network administrator's screen the amount of battery time left.

The interface, which supports Emerson's Accupower Model 40 and Model 50 uninterruptible power supply systems, incorporates a controller, memory and configurable erasable programmable read-only memory.

The product comes with a diskette of configuration software users can employ to customize the interface for their particular networks.

Equipment attached to the LAN can be prioritized so that extraneous devices such as printers and modems can be cut off, thus minimizing the load on the power supply during a power failure. The time remaining on the unit is continuously updated and displayed on the administrator's screen.

The LAN interface is priced at $179.

Emerson Computer Power can be contacted at 15041 Bake Pkwy., Suite L, P.O. Box 19786, Irvine, Calif. 92713; (714) 380-1005.

CC:Mail, Inc. has initiated a free upgrade that enables users of its flagship cc:Mail electronic mail system to receive instant notification of new mail messages from within Microsoft Corp.'s new Microsoft Windows 3.0 graphical user interface software.

Notification of new messages is indicated by a bell tone and either a flashing desktop icon or a pop-up dialogue box.

The user can then click on the notification icon, which in turn will invoke the character-based DOS version of cc:Mail and display it within a Microsoft Windows 3.0 window.

The vendor has promised to deliver a graphical Microsoft Windows 3.0 version of cc:Mail before year end.

Meanwhile, the interim upgrade is available to current users free of charge and will be bundled in future releases of cc:Mail.

CC:Mail is located at 2141 Landings Drive, Building T, Mountain View, Calif. 94043; (415) 961-8800.

Worth Noting

Sixty-four percent of American workers say they believe they're being given more authority to make decisions than they were five years ago.

Based on a survey of 1,000 U.S. workers sponsored by Accountemps Menlo Park, Calif.

Association Watch

Joing the ranks of users groups is the **Network Analysis Users Group.** Established in April, the group's mission is to provide a forum for the exchange of ideas among users of Network General Corp.'s network analysis products. It is also dedicated to providing training on the use of Network General products and techniques for performing network analysis and troubleshooting.

Network General manufactures the Sniffer family of protocol analyzers and the Watchdog, a personal computer-based network monitoring device.

For more information, call Kent Sterling at (415) 688-2700.

The **Federation of Government Information Processing Councils** will hold its 10th annual Management of Change conference on July 18 to 20 in Washington, D.C. The theme of the conference is "People in Automation" and will feature presentations from users and vendors on a range of topics, including total quality management, systems integration and strategic planning.

The group's purpose is to foster better communications between users, information technology vendors, regulatory agencies and academic institutions.

The cost of the conference is $395. For more information, call Howard Ady at (202) 694-8667.

Managing technology in the 1990s

Key findings from the "Management in the 1990s" study

1. The introduction of new information technologies will be a competitive necessity rather than a competitive advantage.
2. Well-managed companies will gain more benefits from implementing information technology than poorly managed companies.
3. Companies that continuously search for innovative ways to implement information technology will achieve a sustained competitive advantage.
4. Successful companies will leverage information technology to speed product development time.

GRAPHIC BY SUSAN SLATER — SOURCE: ERNST & YOUNG, NEW YORK

Landmark report by MIT explores IS issues for '90s

Finds firms will have to be innovative to compete.

By Wayne Eckerson
Senior Writer

Only well-managed companies that actively encourage employees to search for innovative applications of technology are likely to gain a competitive advantage from information systems in the 1990s, according to a ground-breaking new study.

The "Management in the 1990s" report is the fruit of five years of investigation by dozens of researchers at the Massachusetts Institute of Technology's Sloan School of Management. The study is based on conclusions drawn from 80 working papers, which examined the impact of information technology on organizational structures, management, workers and business practices in major companies.

The study was prepared for 12 major corporate sponsors, including American Express Co., Eastman Kodak Co. and General Motors Corp. It was designed to explore why some companies profit from implementing information technologies and others do not. The results were intended to help sponsors understand how best to utilize information technologies in the 1990s.

The study found that companies will be required to introduce new information technologies just to keep pace with competitors (see graphic). Gaining a competitive advantage will be more difficult to achieve.

The well-publicized successes of companies such as American Airlines, Inc. — whose SABRE computer reservation network gave the airline a clear market advantage in the 1970s and early '80s — dramatized the strategic significance of information technology. Since then, most companies have pushed forward with projects of their own, making it more difficult for any one company to retain a competitive advantage for long.

However, the report said companies that encourage innovation and that are willing to adapt workers, organizational structures and business processes around new or existing information technologies can still achieve an edge.

"The key to sustained competitive advantage will be continuous innovation in a competitive environment that will not allow companies to live off the past for long," the study said.

The results of the study have been summarized in a 40-page report titled "The Landmark MIT Study: Management in the 1990s," issued by Ernst & Young, a diversified accounting firm and one of the study's 12 corporate sponsors. A complete analysis of the research by MIT researchers is being published in a book titled *The Corporation of the 1990s,* which will be released in October. A second book, as yet untitled, will contain extracts from a dozen or more working papers.

The MIT study emphasizes that well-managed companies have a better chance of benefiting from information technology than poorly managed companies.

Major network projects are

(continued on page 50)

Success factors

To succeed, information technology projects require:

- Commitment and support from top management.
- Motivated employees who are eager to learn and experiment with technology.
- Teamwork among diverse groups within the company.
- A project champion who pushes a project through to completion.
- Organizational restructuring around new technology.
- Effective user training.

SOURCE: ERNST & YOUNG, NEW YORK
GRAPHIC BY SUSAN SLATER

EDI efforts progress slowly in U.S. firms

Faced with political and bureaucratic difficulties, the technology is still battling to prove its worth.

By Wayne Eckerson
Senior Writer

Victims of a lack of top management support, turf wars and bureaucratic inertia, EDI programs at many companies have stalled in the pilot phase, according to EDI users and consultants.

Users acknowledge that few companies have realized significant cost savings or other benefits from implementing electronic data interchange, and that EDI usage has not grown as fast as many analysts predicted several years ago.

But that can change if EDI managers become more aggressive in promoting the benefits of EDI within their organizations. Users and consultants say EDI proponents need to quantify more clearly the results of EDI pilot tests and present the benefits in terms that senior executives can understand and get excited about.

Users also need to make headway in integrating EDI with existing applications and adding a substantial number of EDI trading partners — two keys to benefiting from the technology.

"Many companies are at a pivotal point in their EDI development," said Kenneth Hutcheson, supervisor of EDI at E.I. du Pont de Nemours & Co. in Wilmington, Del., and chairman of ANSI's X12 committee, which develops inter-industry EDI standards.

"They've done the easy part and established EDI pilots. Now they have to decide whether to expand their programs by integrating EDI into internal applications. This requires a wholehearted commitment, which many companies are still reluctant to make," he said.

A survey of about 600 EDI users commissioned last year by The Electronic Data Interchange Association indicated that more than 65% of those surveyed had

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GUIDELINES

BY BRUCE ELBERT

Net pros can play key role as advisors to top execs

An important but unwritten part of a network manager's job is to provide senior executives with technical advice on projects they're considering.

While you'd be hard-pressed to find it mentioned in a network manager's job description, advising senior management can consume as much as 20% to 30% of a net manager's time. Moreover, net managers who excel as advisors can earn the respect of top management and pave the way for their rapid advancement within an organization.

Unfortunately, some net managers consider serving as an impromptu advisor to senior executives a frustrating interruption that keeps them from attending pressing network problems. These managers should recognize that advisory sessions can improve their ability to anticipate management's needs and desires, and expand their knowledge of network problems.

The following are a few ways in which network managers can serve as effective advisors to senior executives.

■ **Serve as a sounding board.** It's common for senior executives to bounce ideas off a network manager before introducing them to the organization as a whole. Often, executives just want someone to listen to their ideas, not necessarily comment on them. Being a good sounding board is not easy, however. Most managers find it difficult to refrain from commenting on ideas and feel frustrated at not being able to contribute in a more active way.

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Elbert is director of operations for a large communications company and author of several books on telecommunications and information technology.

EDI efforts progress slowly in U.S. firms

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established links with fewer than 10 EDI trading partners. Only 10% had EDI links to more than 100 trading partners.

Only 17% of those surveyed said they have derived a net gain from EDI.

"While many companies report they are using EDI, a significant number are still in the pilot stage," said the study, which was written by Gartner Group, Inc., a Stamford, Conn.-based consultancy.

According to David Taylor, director of interenterprise systems at Gartner Group, most companies have paid lip service to EDI up to this point and do not realize how much money they must spend before they can begin to derive any benefits from the technology.

Taylor said EDI requires companies to completely reorganize the way they operate, a process that could cost millions of dollars.

Restructuring involves mapping EDI information directly into existing applications running on systems in a variety of divisions and functional groups, according to users. That usually requires a systems overhaul as well as greater coordination than currently exists among diverse departments such as logistics, marketing, distribution, systems and procurement.

Credibility gap

Part of the reason EDI has stalled at many companies is that most senior executives refuse to believe or do not understand that it can yield tangible benefits, such as improved customer service and cost-savings, said Thomas Colberg, EDI consultant at Price Waterhouse in Washington, D.C.

Moreover, EDI projects are competing against more immediate concerns, such as shareholder issues, labor troubles and hostile takeover attempts, for the attention of senior executives, Colberg said.

Colberg admitted that he and other early supporters of EDI were guilty of overstating its potential bottom-line impact and the ease with which it could be implemented.

As a result, EDI lost credibility in the eyes of senior executives, who saw it as just the latest gimmick to boost profitability, he said.

This has made it extremely difficult for EDI managers to gain top management support and commitment, without which EDI will never fully take root or yield any significant returns to companies, users and consultants agreed.

"EDI requires a significant management commitment of time, money and resources to make it work," Hutcheson said. "Many companies are having difficulty migrating EDI from the pilot stage into a strategic initiative."

Turf wars

Besides the lack of executive support, politics and corporate bureaucracy also hamstring EDI efforts.

Most large companies have well-defined boundaries between operating divisions and functional departments, such as purchasing, accounting and distribution. It's often difficult to get managers from different departments to cooperate on a joint project, especially one that might change the way they do business.

"There exists a wall between departments that is very difficult to break down," Colberg said.

Moreover, EDI often stirs up turf wars. Some managers may feel threatened by EDI because it competes with their pet projects. These managers may say they do not have enough time or the authorization from their managers to pursue EDI, Colberg said.

"Not all of your colleagues wish you well in your quest to implement EDI," he said.

> "Changing skeptical people's behavior is not easy."
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Be ruthless

To overcome these difficulties, Colberg recommends strong tactics. "Changing skeptical people's behavior is not easy. You must be cunning, persuasive, persistent, relentless, thick-skinned and ruthless. Nice guys finish last," he said.

Colberg said success in EDI is directly proportional to a manager's commitment and desire to achieve a robust EDI program.

He also suggested that EDI managers should be smarter about quantifying the results of pilot tests. Most users fail to collect persuasive evidence about how EDI has reduced lead times for shipping merchandise, reduced costs and increased inventory turns, he said.

Ann Boland, a senior management consultant for IBM in Tampa, Fla., said proponents of EDI are often their own worst enemies. These users don't know how to communicate the benefits of EDI to upper management in terms they can understand and respect, she said.

Boland said EDI users must push hard to get access to senior executives at corporate headquarters and become involved in the business planning cycle. But they also must be ready to communicate the strategic merits of EDI once they get there, rather than its technical components.

"At this point, EDI managers don't have access to [corporate headquarters], and even if they did, they wouldn't know what to say," Boland said.

See The FAXNet Form on Page #51

INTERNATIONAL NETWORKS

USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

Worth Noting

Belgium's national carrier, Regie des Telegraphes et Telephones, plans to begin offering commercial Centrex services next year, according to Susan Mirbach, president of the carrier's American subsidiary. She said the Centrex service will be similar to U.S. Centrex services and will be available from digital central office switches in major urban areas.

World News

The Los Angeles-based satellite service provider **IDB Communications Group, Inc.** recently began offering satellite service to Chile after gaining permission last month from regulators in that country to sell services there.

The carrier now offers 9.6K, 19.2K, 32K and 64K bit/sec service, as well as fractional and full T-1 private-line services to Chile.

Prices range from approximately $4,000 per month for end-to-end 9.6K bit/sec links to about $8,000 per month for end-to-end 64K bit/sec links.

Company officials declined to discuss pricing for fractional and full T-1 services.

Tokyo-based **Nippon Telegraph and Telephone Corp. (NTT)** announced last month that it has overbilled Japanese users by $12.3 million since the carrier was privatized in 1985.

Haruo Yamaguchi, NTT's president, said the error was caused by the input of faulty data into the host computers that handle NTT's billing chores.

Thus far, more than 17 million users, or 70% of NTT's 50 million subscribers, have been overcharged by as much as $100 each.

US Sprint's new Global VPN service comes with a catch

Advanced features require use of an NTI PBX.

By Barton Crockett
Senior Editor

KANSAS CITY, Mo. — The advanced features of US Sprint Communications Co.'s Global Virtual Private Network (GVPN) offering will be available only to customers with Northern Telecom, Inc. PBXs for at least the next year due to incompatibilities between network switches and customer premises equipment from other vendors.

GVPN, a virtual net service linking Hong Kong, the U.K. and the U.S., will be provided by US Sprint and London-based Cable & Wireless PLC using proprietary implementations of Integrated Services Digital Network-like signaling systems.

Since the signaling systems will be specific to the Northern Telecom central office switches that comprise the bulk of each carrier's network, users with customer premises equipment from other manufacturers will only be able to access a bare bones version of GVPN services.

"We can only guarantee that users with Northern [Telecom] equipment will be able to use all of GVPN's functionality," said Jerry Canavan, director of enabling technology at US Sprint.

Announced last month and scheduled for availability in September, GVPN will let customers use public switched facilities to support private network-like functions such as custom-calling plans ("US Sprint's international private net bows," *NW*, April 30).

When US Sprint announced GVPN, carrier officials said the service would support a wide array of advanced international calling services, including switched access to international 64K bit/sec links, incoming caller identification, call forwarding and automatic redial on busy circuits.

But in subsequent interviews, US Sprint officials have acknowledged that these services will only be offered to GVPN subscribers with Northern Telecom private branch exchanges equipped with that vendor's ISDN Primary Rate Interface.

GVPN subscribers with PBXs from other manufacturers will only be able to access switched 56K bit/sec services and international seven-digit dialing plans, the officials said.

US Sprint blamed the slow

(continued on page 26)

Korea mulls proposals to loosen telecom restrictions

By Walter Sweet
West Coast Correspondent

SEOUL, South Korea — The government of South Korea is debating major changes in its telecommunications laws that would for the first time allow foreign value-added network suppliers to offer services in that country.

If the proposals are approved, they will foster greater competition among service suppliers and lead to the introduction of more services and lower costs, a government official said. A liberalization of South Korea's telecommunications policy could also spur other Pacific Rim countries to follow suit.

The revisions to the country's telecommunications laws are still being hashed out in the national assembly but are expected to be approved by 1991. If passed into law, the provisions could be implemented in early 1992.

Until now, the South Korean government has managed all telecommunications resources, technological development and generated revenue from the services.

Currently, the state-run Data Communications Corp. (Dacom) of Korea has a monopoly for voice and data communications services, and the Korea Telecommunications Authority (KTA) is the sole provider of international services. In the future, Dacom said it hopes to resell international calling services and provide enhanced features such as international facsimile services.

Authorities are also relenting to user demands for specialized and varied services in an effort to persuade more businesses to locate their Pacific operations in the country.

Relaxation of South Korea's current regulations barring international value-added service providers from competing in the country could force other countries to adopt similar measures, if only to attract large business customers, according to government and industry observers.

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Proposed U.S. changes to CCITT leased circuit recommendations

- Allow transmission of international private-line traffic into public switched network.
- Allow interconnection of private lines and private networks.
- Offer flat-rate, cost-based pricing for international private lines.
- Drop restrictions on international private-line applications, except when applications compete with monopoly carriers.
- Drop restrictions on allocation of bandwidth within circuits.
- Allow use of preferred terminal equipment, as long as no harm is caused to public network.
- Subject all private-line users to same regulations.

SOURCE: OCTOBER 1989 DRAFT OF U.S. PROPOSAL FOR CCITT RECOMMENDATION D.1. PREPARED BY THE DEPARTMENT OF STATE, BUREAU OF INTERNATIONAL COMMUNICATIONS AND INFORMATION POLICY
GRAPHIC BY SUSAN SLATER

CCITT OKs part of U.S. private-line plan

Group agrees to flat-rate, cost-based pricing in plan to liberalize restrictions on int'l private lines.

By Walter Sweet
West Coast Correspondent

GENEVA — A CCITT working group recently agreed to a key provision of a U.S. proposal to liberalize restrictions on international private lines but will wait until November before ruling on other portions of the proposal.

Members of the Consultative Committee on International Telephony and Telegraphy's Working Party III agreed that international leased circuits should be priced on a flat-rate basis and that pricing should be based on the actual cost of providing service. Currently, carriers in many countries price such services well above cost, using profits to subsidize other efforts.

The U.S. has also proposed that access charges for global private lines be based on actual costs and that users be allowed to feed traffic from private lines into other private or public networks.

The proposal would also allow users to share private lines and resell capacity on dedicated circuits.

> "In some countries, it took years to get permission for dial-up access to our nets."
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Those provisions will be debated again in November. If approved then, the recommendations could take effect in late 1991 or early 1992.

The U.S. proposals involve changes to the CCITT's current D series of recommendations, which are principles that carriers generally adhere to in establishing regulations and tariffs for international services.

"If we had CCITT liberalization along these lines, then American companies could offer services internationally that they offer domestically without a lot of the regulatory hassles they go through today," said Edward Regan, vice-president of corporate telecommunications with Manufacturers Hanover Trust Co. of New York.

> "My overall impression is that we moved steadily forward to lifting restrictions."
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Regan said his bank could have saved a lot of time and money if it had the flexibility to interconnect its net with networks abroad without having to negotiate with each country.

"In some countries, it took years to get permission for dial-up access to our networks," Regan said.

According to Earl Barbely, director of telecommunications and information standards with the U.S. Department of State, the meeting was a good first step toward liberalization. "My overall impression of the meeting is that we moved steadily forward toward lifting restrictions," he said. "We think the meeting in November will be an important one, and the U.S. will be gathering solid support for these provisions."

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CCITT OKs part of U.S. private-line plan

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Not all countries are in favor of liberalizing restrictions. Many of them generate revenue from international private lines that is used to fund government programs.

"They don't want to hand over profit, so it gets to be a real tough argument," Barbely said.

The French objection

France, for example, expressed concern that basing access charges on actual costs would cut into the country's revenue. France supported other parts of the proposal in spirit but was reluctant to forgo revenue from access charges, Barbely said.

A statement was given at the meeting by representatives of the European Commission that called the CCITT's current private-line recommendations anticompetitive.

Barbely said the commission's statement cast a cloud over the meeting and made some representatives from European countries shy away from voicing their opinions about the U.S. proposal.

Barbely said he was pleased with the reaction to the resolution but didn't expect it to be accepted at the first meeting.

"Things aren't done that way, especially with something this sensitive," he said.

He pointed out that the CCITT's documents are only recommendations, not laws. But many countries modify their laws to reflect the recommendations.

US Sprint's Global VPN has a catch

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pace of standards development for the limitations. To offer GVPN services to users in the U.S., US Sprint is using a proprietary implementation of the Q.931 protocol for ISDN D channel signaling.

Carrier officials said the existing Q.931 standard does not spell out how to offer advanced calling features such as automatic redial on busy circuits.

Since US Sprint wanted to make these features available to GVPN subscribers, it used a proprietary implementation of Q.931.

Company officials said Northern Telecom supports the proprietary protocol on its PBXs, but other manufacturers do not.

Cable & Wireless faces a similar situation in the U.K. with its carrier subsidiary Mercury Communications, Ltd. Officials with Mercury Communications said the U.K.'s version of the Q.931 protocol, Digital Private Network Signaling Systems (DPNSS), does not support advanced calling features. As a result, they said Mercury Communications has gone ahead with a proprietary DPNSS implementation.

Fading over time

Officials with both carriers insisted, however, that these incompatibilities will fade over time as new ISDN D channel signaling standards are developed. US Sprint's Canavan said Q.932, which will accommodate advanced calling features, is scheduled to be completed within a year.

PBX manufacturers that support the standard would then be able to let users of their equipment access all of the advanced GVPN features.

"This is really a standards development thing and eventually won't be an issue," Canavan said.

Several users agreed.

"It's definitely a negative, but I don't think it would affect my buying decision since it's really a short-term thing," said John Kies, senior telecommunications consultant with Equifax, Inc., an Atlanta-based on-line information service provider.

Korea mulls telecom proposals

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"If Korea can be considered an example of other Asian countries, what we're going to see is a domino effect," said a spokesman for Electronic Data Systems Corp. of Dallas, a potential service provider in the South Korean market.

Korean officials declined to reveal details of the proposed changes, saying it was not completed and they were awaiting the outcome of a Consultative Committee on International Telephony and Telegraphy meetings in Geneva about a U.S. proposal to liberalize restrictions for international telecommunications before finalizing the measure.

According to Earl Barbely, director of telecommunications and information standards for the U.S. Department of State, countries will often monitor changes with the CCITT and incorporate them into laws in their own country.

Jong-Soon Lee, communications attache with the South Korean embassy in Washington, D.C., said his government is starting a new draft of the existing telecommunications law.

"They're trying to introduce competition in the telecommunications market so there will be some great changes in the law," Lee said. Right now, Dacom and the KTA are the sole monopoly service providers.

According to a high-ranking telecommunications official in Seoul who requested anonymity, the country is considering changes to the regulatory system to liberalize use for international telephone services and allow for the resale of leased lines to international value-added net service providers.

He said the changes will most likely give vendors more opportunities to compete in the country and provide more services. "I think it will open a lot of doors for users," he said.

PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

The Inter-network Courier users get E-mail interface

Consumers Software, Inc. recently announced a new interface for The Inter-network Courier, its electronic mail software that supports the recently announced Microsoft Corp. Microsoft Windows 3.0 graphical user interface.

The Network Courier for Windows is fully compatible with Windows 3.0 and will allow users of The Inter-network Courier to send messages transparently while working in other applications such as spreadsheets, word processors and data bases.

The product, which runs on DOS-based local-area networks such as Novell, Inc.'s NetWare and Banyan Systems, Inc.'s VINES, is a LAN-to-LAN E-mail package.

In addition, The Network Courier for Windows provides full connectivity to Consumers Software gateways, which includes support for X.400, IBM's Professional Office System and Systems Network Architecture Distribution Services, MCI Communications Corp.'s MCI Mail, Simple Mail Transfer Protocol and facsimile.

Users must have The Inter-network Courier Version 2.0 or later to run the The Network Courier for Windows user interface, which costs $595.

The software is available now.

Consumers Software, Inc., 73 Water St., Vancouver, B.C. V6B 1A1; (604) 688-4548.

The Saratoga Group unveils SNA tutorial

The Saratoga Group, a start-up firm in Saratoga, Calif., that provides education and training products, recently released the **Systems Network Architecture Desktop Seminar.**

Consisting of a software diskette, reference manual and quick-access reference card, the product runs on a DOS-based personal computer and provides users with a computer-based introduction to SNA. A single copy costs $695. Quantity discounts or licenses for a local-area network-based version are available.

(continued on page 30)

Bull's DPX/2 server specs

	Model 510 and 510/CS	Model 360	Model 220	Model 110
Speed/CPU	60 MHz/ R6000	25 MHz/ 68040	25 MHz/ 68030	16 MHz/ 80386SX
MIPS	68	15-60	5	3.5
Maximum number of users	512	384	88	10
Disk storage	675M to 40G bytes	388M to 23G bytes	155M to 3G bytes	80M to 160M bytes
Price	$170,000-$600,000	$36,000-$300,000	$11,000-$35,000	$5,200-$10,000

GRAPHIC BY SUSAN SLATER SOURCE: BULL HN INFORMATION SYSTEMS, INC., BILLERICA, MASS.

Bull adds DPX/2 servers with array of net options

New Unix servers support from 10 to 500 users.

By Tom Smith
New Products Editor

BILLERICA, Mass. — Bull HN Information Systems, Inc. recently bolstered its line of DPX/2 Unix-based network servers with the introduction of four servers that support 10 to 500 users.

At the high end, Bull introduced the DPX/2 Model 510, based on a Reduced Instruction Set Computer (RISC) chip and capable of supporting 512 simultaneous users. The other servers include the DPX/2 Model 360, the DPX/2 Model 220 and the low-end DPX/2 Model 110.

Like the current members of the DPX/2 product family, the new systems run Bull Open Software, the company's implementation of Unix System V. They support Transmission Control Protocol/Internet Protocol, some Open Systems Interconnection protocols, IBM's Binary Synchronous Communications and Systems Network Architecture, and Sun Microsystems, Inc.'s Network File System.

The systems can reside on Ethernet local-area networks, and they will support token ring by 1991. All four systems support LAN nodes running DOS, OS/2 or Unix.

The high-end DPX/2 Model 510 is based on Digital Equipment Corp.'s VME bus and a single 60-MHz R6000 RISC microprocessor, manufactured by MIPS Computer Systems, Inc. It can process 68 million instructions per second (MIPS), and it supports 32M to 416M bytes of main memory and 675M to 40G bytes of hard-disk storage.

The Model 510 is also available in a version called the Model 510/CS, which has a communications subsystem analogous to a front-end processor, allowing the server to support wide-area communications.

Model 510/CS supports up to four 64K bit/sec wide-area connections using SNA, OSI or OSI/Distributed Systems Architecture, Bull's wide-area networking protocol.

Both Model 510s have 12 expansion slots. An entry-level Model 510 ranges in price from $170,000 to $600,000, while a typical configuration costs $300,000. Shipments are expected to begin in the fourth quarter.

The new DPX/2 Model 360 complements the existing DPX/2 Model 320 and Model 340, both of which are based on Motorola, Inc. 68030 microprocessors.

Based on one to four Motorola 25-MHz 68040s, the Model 360 processes 15 to 60 MIPS, whereas the earlier Model 300 family members peaked at 29 MIPS.

The Model 360, based on the Multibus II Unix standard bus, can support up to 384 users — the same number as the Model 340

> All four systems support LAN nodes running DOS, OS/2 or Unix.
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— while the Model 320 supports 192. The 360 supports from 16M to 576M bytes of main memory and 388M to 23G bytes of hard-disk storage. The Model 360 boasts 17 expansion slots. Those slots can be populated with Multibus II or VME bus interfaces through the use of a VME bus adapter.

Pricing for the Model 360 ranges from $36,000 to $300,000. A typical system costs $150,000. Shipments are expected to begin in the fourth quarter.

According to Cory Devor, di-

(continued on page 30)

Bestway unleashes 80486 superserver

Optimized for NetWare LANs, Stinger offers more memory and storage than Compaq's SystemPro.

By Charles Bruno
Assistant Managing Editor

YONKERS, N.Y. — Bestway Systems, Inc. last week announced an 80486-based superserver that is built on an industry-standard architecture, supports mainframe-type storage and comes with considerable system memory.

Bestway said its Stinger 486/25R — which uses the Extended Industry Standard Architecture (EISA) 32-bit bus — is being positioned as an alternative to Compaq Computer Corp.'s SystemPro.

Optimized for use on local-area networks running Novell, Inc.'s NetWare, the Stinger is a rack-mountable file server based on a 25-MHz Intel Corp. 80486 microprocessor that processes data at 11 million instructions per second.

The top-of-the-line model comes with 8M bytes of system memory, 64K to 256K bytes of cache memory, up to 4.8G bytes of storage and enough real estate on the motherboard to accommodate six 32-bit and two 16-bit accessory cards. Two other Stinger models come standard with 8M bytes of memory. By contrast, the SystemPro comes with 4M bytes of memory.

"Any less [memory] and you start cutting corners, and we didn't build this box with that in mind," said Clifford Goff, vice-president of system development. "Any high-performance file server is going to need a substantial amount of memory to deal with I/O traffic."

Internally, the Stinger sup-

(continued on page 30)

Access to SprintMail made easier with two releases

KANSAS CITY, Mo. — US Sprint Communications Co. recently added several features to its SprintMail electronic mail service, including an X.400 gateway that enables users of proprietary messaging systems to access SprintMail.

The company also upgraded its PC SprintMail software for users on local-area networks, making it possible for them to share a single server-based connection to SprintMail.

The Access Gateway enhancement for SprintMail enables users on proprietary mail nets to address a message in native format and send it to SprintMail. Access Gateway, which resides on a SprintMail host, converts the E-mail from a proprietary format — such as IBM's Professional Office System — into X.400 format for transmission across SprintMail.

This feature enables users that otherwise couldn't afford their own X.400 gateways to exchange messages across SprintMail.

In addition to PROFS, the gateway supports IBM's DISOSS, Data General Corp.'s Comprehensive Electronic Office, 3Com Corp.'s 3+Mail, Banyan Systems, Inc.'s Banyan Mail, Microsoft Corp.'s Microsoft Mail and Novell, Inc.'s Message Handling System software, as well as any E-mail system supporting the Simple Mail Transfer Protocol.

Pricing for Access Gateway has not been announced. The feature is scheduled to be available in the third quarter.

With Release 2.0 of PC SprintMail, personal computer users can now establish a single connection from a LAN file server to the SprintMail service. Also for the first time, PC SprintMail users can transmit facsimile and Telex messages to and receive them from the SprintMail service.

Release 2.0 of PC SprintMail costs $99, but the company will allow customers that purchased the previous release this year to upgrade for free. Other users can upgrade for a $25 fee.

Lastly, US Sprint announced an enhanced fax feature that enables SprintMail users to customize their fax documents with pre-registered logos and signatures that are digitized and stored in SprintMail computers. The fax feature is also scheduled to be available in the third quarter.

Although pricing has not been set, a spokeswoman said users will likely be required to pay a registration fee of $100 for logos and signatures. Regular fax usage charges will apply for all fax transmissions.

Now that everyone agrees how a computer should work,

Judging by what you see on magazine covers these days, the world now wants what the Macintosh® computer has always had. And, suddenly, the idea that a personal computer should work the way people do has been embraced by virtually every major player.

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cations developed specifically for Macintosh over the last seven years. And instead of patiently following the long path from yesterday's MS-DOS to Windows in the interim and to OS/2 in the someday, you can make one simple step to Macintosh.

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It seems people prefer a machine that works like people do. And they get more done with it: Users rated Macintosh 14% higher for overall satisfaction and 13% higher for performance than for PCs running Windows. Which, according to information managers in the same study, translated into productivity ratings which were 32% higher.

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The power to be your best.™

Bestway unleashes 80486 superserver

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ports four full-height drives, each with 1.2G bytes of storage, as opposed to the SystemPro, which uses double the number of lower capacity drives. The server also supports four half-height storage devices, which can be a mix of tape and disk drives.

Unlike Compaq, which uses an 80186-based intelligent disk array controller to handle up to 1.68G bytes of data across four synchronized hard disks, Bestway uses two Small Computer System Interface (SCSI)-based I/O controllers that operate at the CPU's 25-MHz clock speed.

This lets the Stinger outperform the SystemPro by supporting data transfer rates up to 33M byte/sec, Goff claimed. He added that the Stinger offers an average disk access seek time of 0.10 milliseconds.

However, unlike Compaq's SystemPro, Bestway will not initially offer a multiprocessor Stinger model.

The server supports seven to 14 SCSI devices while providing EISA-based bus mastering of multiple controllers.

The New York Board of Education is using an 80386-based version of the Stinger but plans to upgrade to the 80486 version once funds are available.

"This is the fastest, neatest, most dependable machine I've ever used," said Buzz Robbins, a senior network administrator in the Micronetworks Division of the Board of Education. The division is using the Stinger to control a bulletin board system that is accessed about 500 times a day.

"Disk access is unbelievably fast; you don't even notice when the machine goes off to access the disk," Robbins said.

The high-end Stinger model, with 4.8G bytes of storage, costs $34,000. For $25,500 to $29,000, users can obtain a low-end model with the standard 8M bytes of memory, 256K bytes of cache random-access memory, 4M bytes of SCSI controller RAM, 383M bytes of disk storage and a 5¼-in. floppy disk drive.

All models are capable of running DOS, OS/2 and The Santa Cruz Operation, Inc.'s Unix operating systems. Goff said the company is planning to offer a server optimized for Banyan Systems, Inc.'s VINES networks and may offer a version for 3Com Corp. 3+Open nets.

Bull adds DPX/2 servers with options

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rector of marketing for Unix technology at Bull, the Model 360 and Model 510, like superservers from Compaq Computer Corp. and NetFRAME Systems, Inc., can perform file and print sharing for personal computers, but Bull's systems do so as a secondary function. Their primary role will be as servers to Unix systems running demanding applications such as distributed data bases or statistical analysis and modeling.

Bull's new DPX/2 Model 220 is a mid-range server based on a single 25-MHz 68030. It can execute five MIPS, whereas the earlier Model 210 can process 3½ to 5 MIPS. The Model 220 can support 88 users, and the Model 210 supports 32 users. The Model 220's proprietary bus has two expansion slots for proprietary cards and three others that can be populated with VME or Multibus II cards if a user installs the appropriate bus adapter.

The Model 220 supports 4M to 16M bytes of main memory, and 155M to 3G bytes of hard-disk storage. The Model 210 can be upgraded to the Model 220.

Prices for the Model 220 start at $11,000 and range up to $35,000, with a typical configuration priced at $25,000. Shipments are expected to begin in the third quarter.

The final server Bull unveiled is the low-end DPX/2 Model 110, based on a 16-MHz Intel Corp. 80386SX microprocessor and the industry-standard architecture bus. The Model 110 can perform 3½ MIPS and supports a maximum of 10 users. The Model 110 supports 4M to 16M bytes of main memory, 80M to 160M bytes of hard-disk storage and five expansion slots.

Bull's two new low-end systems can function as communications or file servers for distributed applications in small or midsize organizations, or as a departmental or work group computing resource.

Pricing for the Model 110 starts at $5,200 and ranges to $10,000, with a typical system priced at $7,600. The Model 110 is available now.

For more information on any of these products, contact Bull at Technology Park — MS MA02-313N, Billerica, Mass. 01821, or call (508) 294-6000.

First Look

continued from page 27

The software is divided into six modules: Introduction to SNA, The Structure of an SNA Network, SNA Functional Layering, Architecture of Network Nodes, SNA Data Structures and How IBM Products Implement SNA. The program has a graphical user interface and includes animation to illustrate certain concepts.

Users can proceed through the modules at their own pace, instead of scheduling fixed blocks of time for classroom training. According to The Saratoga Group, no previous knowledge of IBM networking is required.

The program was developed by SNA experts Stephen Randesi and Donald Czubek of Gen2 Ventures in Saratoga. The Saratoga Group was founded by Randesi and Czubek, along with company president Vincent Vaccarello, formerly general manager of 3Com Corp.'s data communications division.

The Saratoga Group, 12930 Saratoga Ave., Suite D-5, Saratoga, Calif. 95070; (408) 446-9115.

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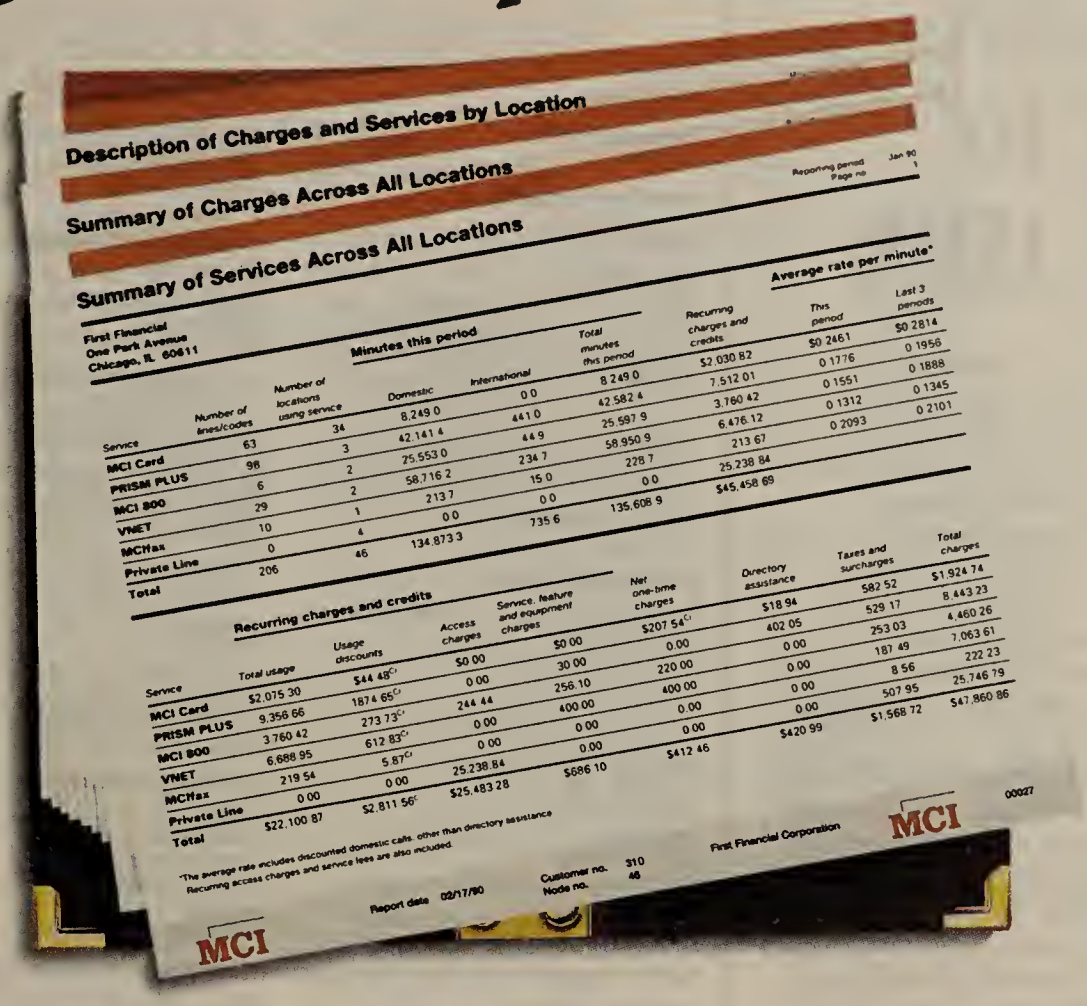

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OPINIONS

THE FUTURE PUBLIC NETWORK

BY MARY JOHNSTON

The forklift upgrade to broadband ISDN

Underlying the communications industry's vision of the future is the assumption that the migration from today's so-called narrowband environment to the brave new world of broadband will be smooth, evolutionary and even transparent. Unfortunately, it may look more like a forklift upgrade.

The move to broadband requires fiber, not only in the carrier distribution backbones, but in the last mile to the end user as well. It requires implementation of the Synchronous Optical Network standard, which is designed to operate at multigigabit speeds. It requires new types of switches — both metropolitan-area network and asynchronous transfer mode. And, finally, it requires money.

> The upgrade will take much more time than users or computer vendors think.
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Despite general expectations that the data and mixed-media applications of the 1990s will require multimegabit transmission speeds, the fact remains that the common carriers, particularly the local exchange carriers, must justify and recover the expenses of an upgrade that will cost each of them billions of dollars.

Regulated carriers have two major options from which to choose when paying for these upgrades. They can:

■ **Charge the full cost of the conversion to the specific users.** This method has been common in the past through individual case-basis tariffs. However, recent regulatory rulings have required the local exchange carriers to file tariffs for such services as T-3. If preliminary tariff filings are any indication, the cost of these services may be enough to discourage all but the most visionary users.

■ **Allocate the cost of the upgrade over the entire rate base.** To those who consider broadband to be part of the general upgrade of the network, this is obviously the best way to proceed. Unfortunately, in order to roll out broadband networks to major urban areas by the end of the century, carriers might have to substantially increase the cost of basic service for every subscriber. And what if the Baby Bells are freed, as they are currently requesting? How can they justify rapid multibillion-dollar investments when they have stockholders to satisfy, little regulatory protection and no support from bona fide user demands?

The bottom line is that the upgrade will take much more time than many users or computer vendors think. This drawn-out process will open opportunities to the struggling alternative carrier market and to vendors that can get more efficiency out of existing T-1 facilities. And it will force users and application developers to consider non-network-based ways of meeting their requirements. For example, distributed computing, CDROM and new wireless distribution technologies could push the terrestrial public networks out of the critical path for supporting new high-capacity applications.

Users and network carriers as well as computing and application vendors would do well to perform a "reality check" on the assumptions they have about application development vs. network capabilities. Evaluating the realities associated with the construction of next-generation public networks may cause them to reconsider their long-term computing and communications strategies.

Johnston is a principal with Northeast Consulting Resources, Inc., a Boston-based consulting collaborative specializing in management, communications and information strategies.

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An IDG Communications Publication

EDITORIAL

Standards are users' best tools for managing change

At the recent International Communications Association conference in New Orleans, numerous influential members of the communications industry — users, vendors and policymakers — called for greater user involvement in the process of setting networking standards.

Herbert Ungerer, a division head for the European Commission's Directorate General XIII, observed that few users today are even attempting to influence standards, and those who do so labor under a serious disadvantage compared to the well-versed and well-funded lobbyists and standards committee members sponsored by the vendor community.

The typical user response when these issues are raised is, "Why should I get involved? Upper management doesn't encourage it, and I can do better acting on my own to choose an optimum combination of products and services — whether they're standards-based or not."

Managing change

Wrong. According to Lionel Gillerman, vice-president for Regulatory Affairs for the Tele-Communications Association, Inc., the reason users should work hard to influence standards is that standards are users' best tools for managing change.

Managing change is the network manager's toughest, most primary challenge. Whether your network is standards-based or not, it will change over time, and that change must be managed.

The challenges of managing change in a multivendor network are all too familiar. Different vendors implement standards in different ways, and their products evolve at varying rates.

There's no solace in a single-vendor strategy. You still have to deal with new generations of hardware and new revisions of software, and there are plenty of interoperability snares set along the migration paths to the new versions.

And because no corporate network exists in isolation, the multivendor connectivity problem surfaces anyway when you link to the outside world.

Given that influencing standards is a must, how can you go about it? Work through users groups to nudge vendors by providing direct input to standards committees, both national and international. Make sure the same input is provided directly to all of your key vendors, whether they sell software, hardware or services.

Finally, develop product procurement policies that require compliance with all applicable standards for each type of product purchased.

These tactics will be effective only if users present a united front to vendors and standards makers.

OPINIONS

INDUSTRY

BY SHARON PEYTON

Telecom vendors should lead by example

Telecommunications industry vendors should adopt a new business strategy: leading by example. This tactic involves designing new ways of doing business that involve moving images, not people.

Current methods of operation are based on the needs of the industrial age, when the production line required that all workers physically gather in the same place at the same time. We are now well into the information age, yet businesses still cling to antiquated, less productive procedures.

As workers and businesses, we have contributed to the problems threatening our physical and mental well-being — air pollution, overcrowded cities and traffic congestion. Our cherished institutions are crumbling under the weight of these and other problems. Now is the time for us to discover solutions.

The telecommunications industry has a wonderfully unique opportunity to be an important catalyst and leader in this effort. It can use new technologies and methods to improve the quality of life by reducing these problems while stimulating increased business.

The alternative technologies of telecommuting and teleconferencing have been available for some time but have yet to gain general acceptance. What is noticeably absent is the general commitment of businesses in our industry or any industry to lead this course of action.

Most current activity in this arena is in the government sector, which is driven by its sense of duty to serve the public good while reducing expenses. As presumed technological experts, telecommunications vendors should lead the pack, not lag far behind as they do now.

Players in the telecommunications industry can initiate this strategy by aggressively and intelligently pursuing internal efforts to improve and redesign how they function. There are four good reasons to do this:

- Vendors could increase revenue by demonstrating how to make these changes, stimulating increased business for their products and services as well as the industry in general.
- They could discover new ways to reduce expenses.
- They could improve productivity by improving morale and the quality of life for their employees.

> We are now well into the information age, yet businesses still cling to antiquated procedures.
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- Finally, there is a more subtle and hidden benefit that is difficult to quantify. It requires that those in the telecommunications industry look beyond the obvious. They should understand there is a very high cost, both monetary and nonmonetary, incurred by all of society for our problems and our efforts to deal with them.

Each of us shares in the expense either as direct or indirect victims or participants. Therefore, another potential benefit is the reduction of these expenses.

With blinders firmly in place, companies now train their sales staffs to sell telecommuting applications but refuse to let their own employees telecommute.

When it comes to teleconferencing, they offer minimal or nonexistent facilities. Even if there are facilities, employees are reluctant to use them because of resistance to change and limited knowledge about the equipment and the most effective way to use it. Many people are not knowledgeable about meeting and communication skills, much less about the additional skills required to conduct a teleconference rather than a face-to-face meeting.

This commitment to take action and set an example requires not just the willingness to risk doing the right thing for the right reason, but the effort to be careful and thoughtful, and to establish resources to educate employees and support them throughout the process.

There is an approach to these kinds of changes that can increase the chances of being successful. The first cohesive element is for senior management to create and share a positive vision of the desired results. This will inspire a willingness to embrace positive change.

With this executive advocacy, we can provide a customized method that establishes a general company policy in support of the direction these changes should take. Second, we can offer a selection of implementation options from which to choose. And finally, we can apply this outline of general direction and structure to each appropriate work group.

Once telecommunications businesses have instituted such changes, their employees — especially their sales staffs — will be able to share the successful personal experiences from within their own company, thus setting a positive example for the rest of the business community.

If they continue to delay action, the government will eventually force it on them.

In Los Angeles, the government has already established Regulation XV, which forces businesses to develop alternative ways of working that reduce traffic and pollution.

By meeting this challenge now, telecommunications vendors will demonstrate that they are creative enough to serve their business constituency while making a contribution to society. What is good for society is good for business.

Peyton, a telecommunications consultant in the San Francisco Bay area, is doing graduate work in communication process and organizational development.

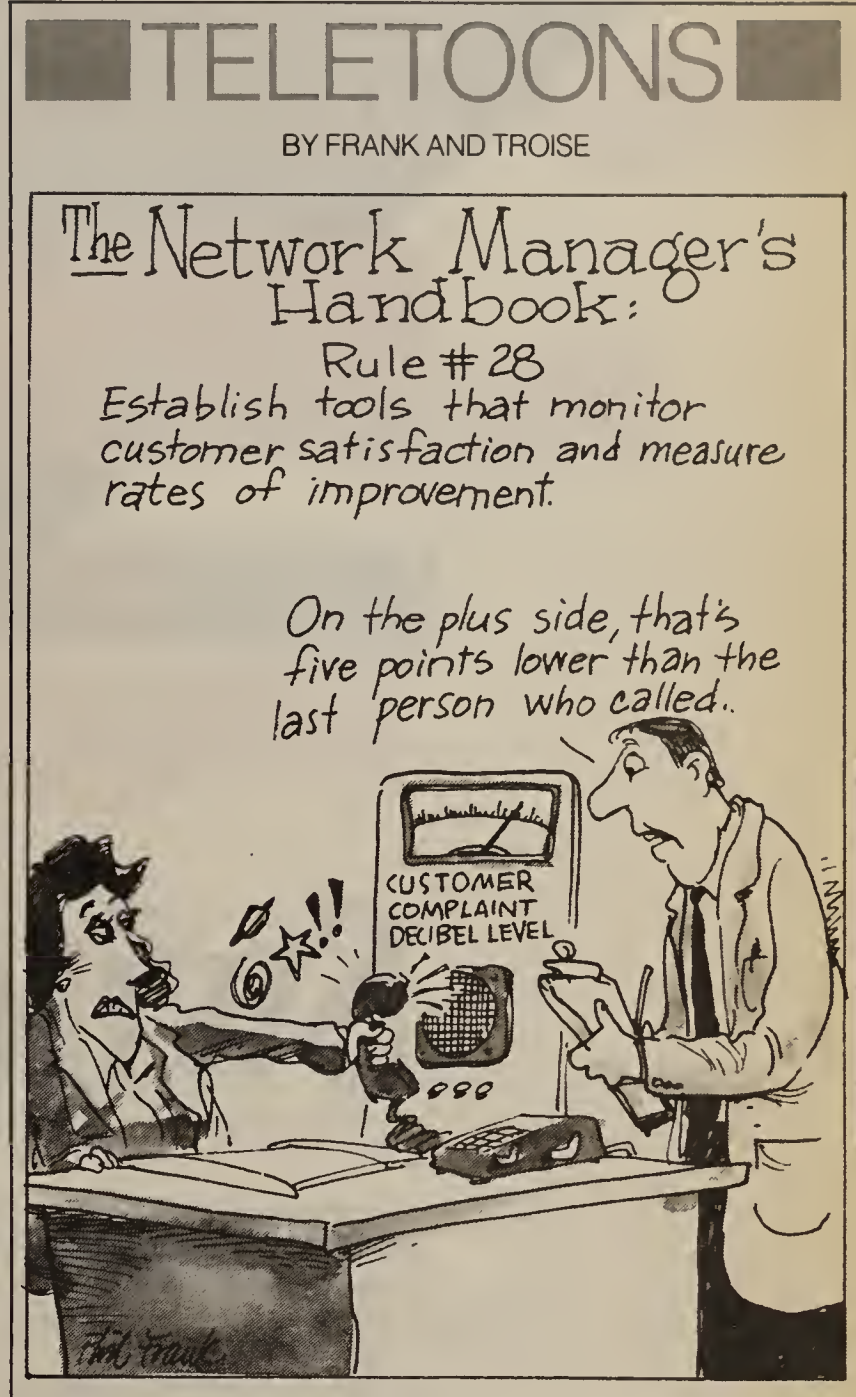
PEOPLE "BOIL AT DIFFERENT DEGREES," said Emerson. What's your boiling point? When you reach it, don't get steamed. Write a column for *Network World* instead.

Columns should be between 600 and 900 words in length and submitted on disk, via modem or through MCI Mail at 390-4868.

If you'd like to write a column, call Steve Moore, features editor, at (508) 820-7439 or fax your idea to us at (508) 820-3467.

TELETOONS

BY FRANK AND TROISE



LETTERS

IVAN information

Your Buyer's Guide to international value-added network (IVAN) service providers ("Good news on the global front," *NW,* May 21) provided much-needed and hard-to-find information.

However, it would have been more useful if the article had included phone numbers and addresses of these various IVANs.

Art St. George
Network services officer
University of New Mexico
Albuquerque, N.M.

Editor's note: A list of phone numbers and addresses of major U.S.-based IVAN service providers appeared on page 94 of that issue.

Clarifying bridge features

I enjoyed your recent Buyer's Guide to bridges, routers and gateways ("LAN links boast broader protocol, speed options," *NW,* May 7).

I'd like to clarify a statement regarding the ability of bridges to provide the means to control network topology remotely in the event of a failure.

In my opinion, the article left the reader with the impression that bridges cannot do this. Retix bridges not only allow remote access for management and reconfiguration, but they also can automatically reconfigure.

The Spanning Tree Algorithm mentioned in the article allows Retix bridges to detect a path failure and automatically reconfigure the network to an alternate path.

The Spanning Tree Algorithm also allows Retix bridges to detect and eliminate "loops" in the network, thus enhancing their performance advantage when compared to routers.

Bill Kilcullen
Senior national technical specialist
Retix
Santa Monica, Calif.

Network World *welcomes letters from its readers.*

Letters should be typed, double-spaced and sent to Editor, Network World, *161 Worcester Road, Box 9172, Framingham, Mass. 01701.*

Letters may be edited for space and clarity.

DATACOM

BUYER'S GUIDE

SWITCHED DATA SERVICES

Switched-on carriers

CONTINUED FROM PAGE 1
tion type of service. And this is primarily due to lack of compatible access at either end of a phone call.

This situation will not last for long, however. The rollout of Integrated Services Digital Network in the local loop is proceeding as planned, and higher speed products in the interexchange realm are becoming widely available. These developments foretell lower costs and greater switched data functionality in the near term for companies of all sizes.

Merging voice and data

The transmission of voice and data over the same facilities has been driving market development in recent years. But only this year have the top three long-distance carriers — AT&T, MCI Communications Corp. and US Sprint Communications Co. — indicated their true commitment to integrating data with voice.

Many of the changes are subtle. A year ago, MCI had one-half of a director's responsibilities assigned to data services. In the past year, MCI has created two additional data-oriented director positions, which is notable in an organization as lean as MCI's.

Other moves are more blatant.

Briere is president of TeleChoice, Inc., a Manchester, Conn.-based consulting firm specializing in long-distance competitive analysis and network design. He can be reached at (203) 645-0471.

The consolidation of US Sprint and Telenet Communications Corp. as SprintNet into US Sprint's core organization is significant as the move starts the melding process of data and voice within US Sprint.

When the carrier announced its new Invoice Processing Service at Communication Networks '90 in February, one glossed-over tidbit was that the data products would be consolidated under a new billing system by the middle of 1991, joining the full range of US Sprint's voice and enhanced services, such as 900, SprintFax and videoconferencing.

This consolidation allows US Sprint to combine pricing for voice, data, imaging and video under a single bill and discount plan.

Recently, AT&T has actively campaigned to increase industry awareness of its switched data services.

In the past 12 months, AT&T has reduced its network usage rates by as much as 74%, expanded the availability of the service from 83 to 389 points of presence (POP), expanded the availability of the digital switched access (DSA) option from 93 to 196 cities and introduced time-of-day rate schedules.

In addition, AT&T has accelerated its ISDN implementation plans. Of the major long-haul carriers, AT&T has the most ambitious ISDN rollout schedule. By June 1, ISDN capability was installed in 322 AT&T locations plus France, Japan and the U.K. By year end, ISDN will be available in 343 AT&T locations nationwide.

Gauging performance

One of the biggest drawbacks of voice-oriented long-distance products, notably the virtual network services, has been their inability to carry higher speed data traffic. Data managers have grown accustomed to the closed environment of a private-line network, in which they can test individual circuits and obtain ongoing performance specifications for all calls over those circuits due to the nature of the dedicated path.

With switched data, however, the path changes with each call. Circuit performance specifications apply to all possible routes for a call over the public network. Compounding the problem is the fact that little commonality exists between performance specifications for a private line and those of a public network.

Items such as availability and error-free seconds have only tangential applicability.

The carriers are trying to develop their own switched data standards that truly reflect the underlying needs of the data communications manager. However, simply transporting the specifications required of private lines to switched data services will not work because the specifications do not adequately describe the services.

AT&T's services

AT&T offers a variety of dial-up switched digital data capabilities. To public network customers, AT&T markets these capabilities as Accunet Switched Digital Services (SDS), but to Software-Defined Network (SDN) customers, the carrier markets them as its Software-Defined Data Network (SDDN).

AT&T offers a switched 56K bit/sec option to its SDS and SDN customers. Because its network is not completely digital, AT&T uses a subnetwork with performance characteristics that meet the needs for switched data services.

AT&T originally introduced switched 56K bit/sec data transmission as a stand-alone product in 1985, under the name Accunet Switched 56 Digital Service. At the time, the service had only limited success among users, largely due to limited availability and high costs (up to 85 cents per minute).

In 1988, AT&T sought to bolster both Accunet Switched 56 and SDN by linking the two to allow SDN users to send data at 56K bit/sec. However, SDN users still faced the same constraints that regular Accunet Switched 56 users do, namely high costs and limited availability.

Then, last year, AT&T slashed prices to bring them more in line with its competitors, which were

offering switched data transmission at voice rates. AT&T offers the switched 56K bit/sec capability, marketed as Digital Routing, in two forms: static and dynamic. In static mode, there is full-time access to the network at 56K bit/sec and the usage charges are the same as Accunet Switched 56.

In dynamic mode, the user may initiate 56K bit/sec calls on a call-by-call basis using a special feature code. This code tells the network that a switched 56K bit/sec call should be routed to the Accunet Switched 56 network. In dynamic mode, 56K bit/sec calls are rated at Accunet rates while all other calls are rated at their appropriate SDN scheduled rate.

One drawback to AT&T's Digital Routing is that, until recently, it was available only at the more than 250 SDN offices specifically set up for the capability. An SDN user could not have a videoconference with an Accunet Switched 56 user. Until recently, AT&T was unable to terminate SDN Digital Routing calls off the SDN network.

AT&T's new services

Last month, AT&T again began to upgrade and enhance its switched data services across the board. This time, AT&T is linking the capabilities of SDN with Accunet's switched data services. What's more, AT&T has expanded Digital Routing beyond the early on-net borders, allowing users to terminate switched 56K bit/sec calls off-net to locations not on the SDN version of switched 56K bit/sec service.

Through SDS and SDDN, AT&T will bring switched 56K, 64K, 384K and 1.536M bit/sec speeds to users. The latter two speeds are the ISDN H0 and H11 access standards, respectively.

AT&T has filed tariffs with the Federal Communications Commission for the switched 56K and 64K bit/sec speeds. The 384K bit/sec option will follow on Sept. 1 for SDDN and Dec. 1 for SDS, while 1.536M bit/sec will be launched in the second half of 1991. AT&T's approach for all of the speeds is to offer in-band signaling, as well as ISDN out-of-band signaling.

SDDN — which is an option of SDN, not a separate product — builds on the capabilities in AT&T's 4ESS network. Access is through the Primary Rate Interface (PRI). However, the actual placement of an SDDN call will be done through call-by-call setup, allowing users to make Megacom, SDN or SDDN calls over the same access facilities.

Initial releases of SDDN require a special PRI device on the customer premises. AT&T will rely on these devices to coordinate restoration on an end-to-end basis.

SDDN will enable users to dial up multiple connections for higher amounts of bandwidth. For instance, a user that wants 384K bit/sec of bandwidth for an application, such as videoconferencing, could dial up six lines to get the 384K bit/sec.

Pricing for SDDN is calculated on a first 18 seconds, each additional six seconds format, with rates varying from 6.8 cents to 22.1 cents per minute, depending on mileage and time of day.

For SDN customers, these rates are then eligible for any applicable SDN discounts; all switched usage applies to SDN discount levels. AT&T has priced the services so that a user with fewer than four hours of data traffic a day between two locations would be better off with switched data service as opposed to dedicated data channels.

SDS offerings are similar to SDDN but are stand-alone public offerings. Rates are billed in an initial 30 seconds, each additional six seconds format, starting at around 11 cents per minute.

MCI and US Sprint do data

MCI offers switched 56K bit/sec capability in two offerings — as a stand-alone service through its Prism 56 service and as a feature of its Vnet virtual network. MCI also plans to offer 64K bit/sec clear-channel capability in 1991.

At the ICA conference in New Orleans in late May, MCI announced that it plans to make DDS access available in the third quarter of 1990. The carrier also announced support of switched digital access for the fourth quarter of this year. Early next year, MCI plans to launch switched T-1 capabilities.

MCI began offering switched 56K bit/sec in October 1989 as a stand-alone service with open network dialing capabilities. In 1990, the capability was added to Vnet.

MCI has set aside its Digital Data Network for its data products, including its private-line offerings.

MCI's rates for switched 56 service range from 6 cents to 23 cents per minute, depending on service type, time of day and distance. At this level, switched data services become more economical than MCI private lines when the user requires the service for less than two to six hours per day.

MCI is now working feverishly on launching its ISDN services. MCI ISDN Switched Digital Transmission will offer high-volume, host-to-host data transmission through PRI access lines. Implementation of ISDN data transmission is initially through 64K bit/sec service. A 384K bit/sec version supporting H0 and a 1.536M bit/sec version supporting H11 are in the works.

An important part of MCI's ISDN offerings is the Digital Reconfiguration Service (DRS), which will provide bandwidth on demand. With DRS, an MCI user can request bandwidth in DS0 increments, up to and including DS1.

The carrier already offers a similar in-band signaling product called Fixed Network Reconfiguration. DRS is due in the fourth quarter of 1990.

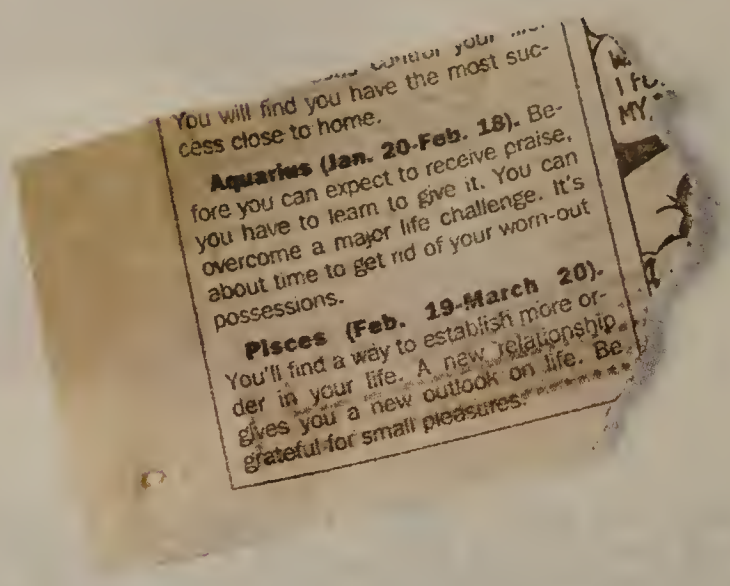
US Sprint has launched several

(continued on page 39)

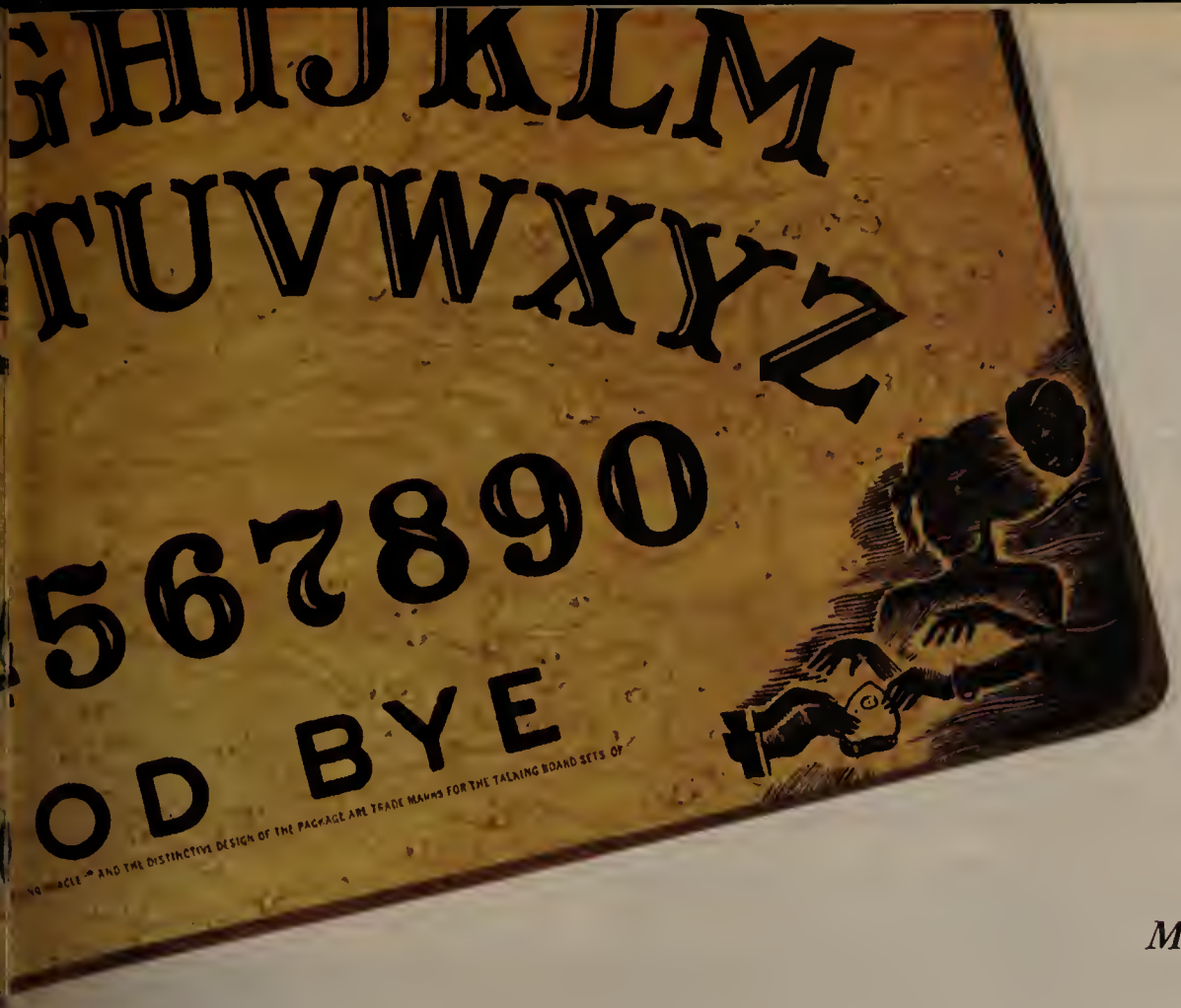
Lower costs and greater functionality promise to make switched data services accessible to companies of all sizes.

CHART • GUIDE

Beginning on page 38, a *Network World* Buyer's Guide chart compares the features and prices of various carriers' switched digital services.



Predicting compatibility for
Delivering it today is another.



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AT&T Paradyne

See The FAXNet Form on Page #51

NETWORK WORLD

Switched digital services (continued on page 49)

Company	Service	Service type	Speeds supported (bit/sec)	Network facilities used	Access required	Areas served	Service installation fees	Monthly service costs	Minimum usage required	Usage fees (8)	Usage fee basis	Performance statistics	Special features
AT&T Basking Ridge, N.J. (800) 222-0400	Software-Defined Data Network	Interexchange	56K, 64K, 384K (4)	General Public Network with special screening	Dataphone Digital Service, voice grade (2-wire), T-1, PRI, Digital Switched Access	End offices/ POPs: 4.8K: all equal access points; 9.6K: 508; 56K: 285; 64K: 285	Service: $100; access: pass-through LEC costs	None (must be an SDN customer)	None	$.0204 to $.0663 for first 18 seconds; $.0068 to $.0221 for additional 6 seconds	Mileage-based	Error-free seconds: Premises to premises: 95% on 95% of calls; POP to POP: 95% on 99% of calls; Premises to POP: 95% on 98% of calls; Bit error rate: 10-6	Full range of SDN features: call-by-call setup, 7- to 10-digit conversion, restoration
	Accunet Switched Digital Services	Interexchange	56K, 64K, 384K (4)	Separate 64K bit/sec clear-channel, digital sub-network	56K: Dataphone Digital Service, T-1, Digital Switched Access; 64K: ISDN PRI; 384K: ISDN PRI	End offices/ POPs: 389 T-1 access nodes, 83 Dataphone Digital Service access nodes	Service: $0; access: pass-through LEC costs	Service: $0; access: pass-through LEC costs	Dedicated access: $75; Digital Switched Access: $20	Distance and usage sensitive: $.0804 to $.3018 per minute	Mileage-based	Error-free seconds: Premises to premises: 95% on 95% of calls; POP to POP: 95% on 99% of calls; Premises to POP: 95% on 98% of calls; Bit error rate: 10-6	International connectivity; dedicated control center (800) 367-7956; digital broadcast capability (800) 322-7956 (that is, multiple one-way transmission or two-way audio when used with Alliance Teleconferencing)
Bell Atlantic Corp. Washington, D.C. (703) 974-5448	Switched 56	Intraexchange; interexchange access	56K	General Public Network	Switched 56 access (same specifications as DDS)	End offices/ POPs: 800+	$725 per line	Monthly service cost: $150 per line; $1.00 per mile outside serving office node	None	$.14 per minute	Fixed rate	NA	None
	ISDN Switched 64	Intraexchange	64K	General Public Network	ISDN BRI	End offices/ POPs: ICB (3)	ICB (3)	ICB (3)	None	ICB (3)	ICB (3)	NA	ICB (3)
BellSouth Corp. Washington, D.C. (202) 463-4100	Digital ESSX Switched Data Service (Centrex); Accupulse (plain old telephone service)	Intraexchange; interexchange access	56K; 64K (intraoffice); subrate speeds depending on CPE	General Public Network	DDS, voice grade, T-1	End offices/ POPs: ISO (3)	ESSX: $18 to $25 per line; Accupulse: $300 to $400 per line	ESSX: $20 to $45 per line; Accupulse: $50 per line	None	ESSX: flat within customer group, usage on public switched network calls costs $.12 for first minute, $.10 for each additional minute; Accupulse: same as ESSX	Fixed rate	NA	Full range of Centrex features for ESSX service, including virtual private network line feature that redials if line drops
MCI Communications Corp. Washington, D.C. (800) 888-0800	Vnet 56	Interexchange	56K	Separate MCI Digital Data Network	T-1, DDS (3Q/90), Digital Switched Access (4Q/90)	End offices/ POPs: 190 access nodes	Service: same as Vnet (must be Vnet user); access: pass-through LEC costs	Service: $0; access: pass-through LEC costs	$50 per line (waived under present promotion)	Vary by access arrangement: dedicated to dedicated: $.0180 to $.0441 for first 18 seconds, $.0060 to $.0147 for additional 6 seconds before Vnet discounts; shared to shared: $.0432 to $.0693 for first 18 seconds; $.0144 to $.0231 for additional 6 seconds before Vnet discounts	Mileage-based, time-of-day sensitive	Equal to DDS performance objectives	Full range of Vnet features, 7/10-digit private plan, consolidated billing, T-1 access partitioning, MCI end-to-end support, network management system
	Prism I Switched 56K bit/sec Service	Interexchange	56K	Separate MCI Digital Data Network	T-1, DDS (3Q/90), Digital Switched Access (4Q/90)	End offices/ POPs: 190 access nodes	Service: $0; access: pass-through LEC costs	Service: $0; access: pass-through LEC costs	$50 per line (waived under present promotion)	Vnet Rates: vary from $.0710 to $.1706 per minute; eligible for Corporate Account Service Plus discounts	Mileage-based, time-of-day sensitive	Equal to DDS performance objectives	Inter-MCI 56K bit/sec customer dialing, MCI end-to-end support, T-1 access partitioning, performance monitoring capability, MCI-provided CPE
New England Telephone and Telegraph Co. Boston (817) 574-1542	Switchway	Intraexchange; interexchange access	56K; subrates depending on CPE	Separate subnet-work	DDS	End offices/ POPs: 15	Service: $79.06 (2); access: $290.98 per line	Service: (2) $18.43, end user charge, $3.95; access: 19.40 per line	None	Intra-Switchway wire center: $.10 for first minute, $.08 for each additional minute; inter-Switchway wire center: $.19 for first minute, $.15 for each additional minute	Fixed rate	Equal to DDS performance objectives	None
New York Telephone Co. New York (800) 942-1212	Switchway	Intraexchange; interexchange access	56K; subrates depending on CPE	General Public Network	DDS; voice grade (2-wire)	End offices/ POPs: 160	Service: $400; access: local access rates vary, by service: DOV, approx. $60	Service: $84; access: local access rates vary, by service	None	$.07 per minute plus local calling charge	Fixed rate	Availability: 99.7%; 4-hour restoral on dedicated access, 24-hour restoral on DOV access	Protocol conversion available — Comparably Efficient Interconnection plan approved Jan. 6, 1990
Pacific Bell San Francisco (415) 823-8380	Centrex IS	Intraexchange; interexchange access	56K, 64K	General Public Network	ISDN BRI	End offices/ POPs: 35 (4Q/90)	Service: $0; access: $150 per BRI line	Service: $0; access: $29.50 per BRI line	None	Same as public voice usage costs	Mileage-based	Bit error rate: 10-8; line tests will be performed within 4 hours of customer trouble report	All digital service, integrated voice and data plus a complete set of line side voice features that are also available for data; support for X.25 packet switching data at speeds up to 64K bit/sec

BRI = Basic Rate interface
DDS = Digital data service
ICB = Individual-case basis
LEC = Local exchange carrier
NA = Information not available
POP = Point of presence
PRI = Primary Rate Interface

FOOTNOTES:

(1) Dial 1 Digital lets users originate and terminate data/video on existing Feature Group D lines when the LEC has digital connectivity to US Sprint's point of presence. Thus, this service is dependent upon the LEC and its agreement to offer switched 56K bit/sec at FGD prices to remain consistent with US Sprint's "data for the price of voice" philosophy. The following LECs are participating: Ameritech, Centel Nevada, Contel, Pacific Bell, Southern Bell and UTI.
(2) Tariffed in Massachusetts only.
(3) Product is not presently tariffed but is available on an ICB.
(4) Service expands to include 384K bit/sec (December 1990); 1.536 (second half, 1991).
(5) Requires purchase of a minimum of two Centrex lines in addition to the CenPath line; available in DMS-100 offices only; customers must meet certain loop length requirements.
(6) Pacific Bell is planning to replace PSDS in the fourth quarter, 1990.
(7) MicroLine I service arrangement allows customers who are not served directly from a Switched 56 central office to have this service. The result is that almost any customer in an area that has a Switched 56 central office can be provided MicroLink I regardless of whether their serving office is Switched 56 equipped or not.
(8) Usage fees listed for all Bell operating companies do not include interexchange carrier toll charges.

This chart includes a representative selection of vendors in the switched digital services market. Many vendors not included offer a full range of competitive products. Ameritech and US West were unable to respond by press time.

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

(continued from page 35)
switched data services, including some specifically associated with its Federal Telecommunications System 2000 contract. US Sprint supports dedicated and switched access to its services.

When US Sprint first launched VPN 56, the service used the same rates that US Sprint was charging for voice calls. This concept still holds true as US Sprint rolls out its other data products.

The reason US Sprint sets its rates in this manner is that the carrier uses its standard digital network for carrying the calls; a digital network doesn't care if a call is voice, data, facsimile or image. The US Sprint digital net also allows the carrier to roll out new services networkwide.

By comparison, AT&T and MCI support their data products by way of separate networks with their own operations centers. According to AT&T and MCI, separate networks allow them to preferentially route calls according to content, thereby maintaining higher levels of performance. However, these subnetworks may not be available at all POPs.

US Sprint ISDN PRI access gives users an interface to the carrier's high-volume services, such as Ultra 800, Ultra WATS, switched digital services and Virtual Private Network (VPN). The ISDN offering is offered internationally via Global VPN to Great Britain and Hong Kong.

US Sprint also supports digital switched access where it is supported by the local exchange carrier. This includes Ameritech's Public Switched Data Services (PSDS), Pacific Bell's CenPath and Southern Bell Telephone and Telegraph Co.'s Accupulse, as well as certain areas served by Centel Nevada, Contel Corp. and United Telecommunications, Inc. (UTI).

The RBHCs and switched data

The interexchange carriers have embraced switched data in all its various forms, but the RBHCs have shown considerably less enthusiasm with a few notable exceptions.

The interexchange carriers have been able to offer their versions of switched 56K bit/sec data transmission by largely ignoring the local public network. Each carrier initially used dedicated facilities to bring all calls to its POPs because compatible local exchange access services were lacking.

To a large degree, they still are. The chart beginning on page 38 shows the availability of data services throughout some of the RBHC regions. Most are limited to a few offices in each metropolitan area. Aside from dedicated access, the local exchange carriers are starting to implement switched digital access capabilities in their local networks. Placement of an end-to-end switched access call requires that switched access facilities be installed at both the originating and terminating locations.

Switched access offers two key benefits over dedicated facilities: lower cost and greater convenience. A DDS access link costs approximately $550 per month; a DSA access line runs about $85.

Companies with lower levels of usage might not be able to justify the higher fixed costs of dedicated access facilities. And switched digital access is more convenient because it reduces the long installation time and complex coordination procedures often associated with dedicated access. It also allows users with virtual network services to combine this access with their on-net facilities.

New York Telephone

Perhaps the most proactive switched data Bell operating company is New York Telephone Co. The carrier has Switchway, an in-place, switched 56K bit/sec offering that has 100% availability in the New York metropolitan area — quite unusual for a local switched data service.

New York Telephone has been aggres-
(continued on page 49)

Data applications

Here's a list of applications for which switched data services fit the bill better than standard public lines.

■ **Bulk data/file transfer.** This process allows a company to gather information from a terminal or central processing unit and transfer it in bulk quantities.

Information is gathered and stored at a specified location, and it is sent when the storage unit reaches full capacity or when a certain time-out period is reached.

■ **Computer-aided design.** CAD programs are too large and powerful for use with the regular public switched network. This is because 9.6K bit/sec voice-grade lines can't support the software. High-speed digital lines allow engineers using CAD technology to work interactively at separate locations.

■ **Videoconferencing.** Switched digital service can be used for videoconferencing transmission, linking either two sites within a regional Bell holding company's territory or connecting into your long-distance carrier's videoconferencing net.

■ **Electronic mail.** Switched digital lines are a usage-sensitive way to transmit E-mail.

■ **Digital facsimile.** Digital fax machines send only the information printed on the page, not the blank space in between. This saves on costly transmission time. Switched digital is a usage-sensitive way to take advantage of the benefits of digital fax.

— Daniel Briere

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Donna Fields, South Central Bell

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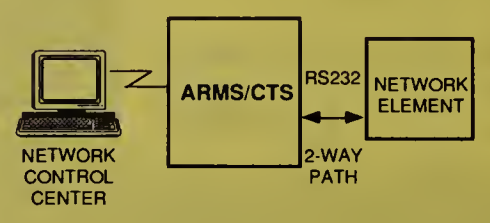

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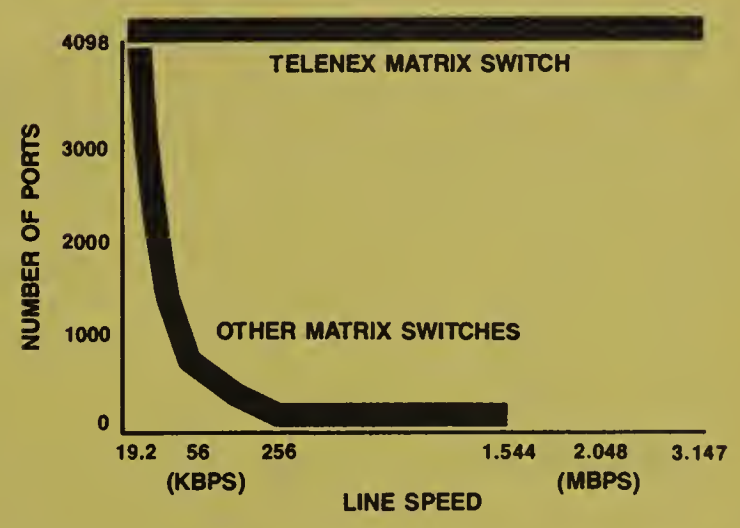

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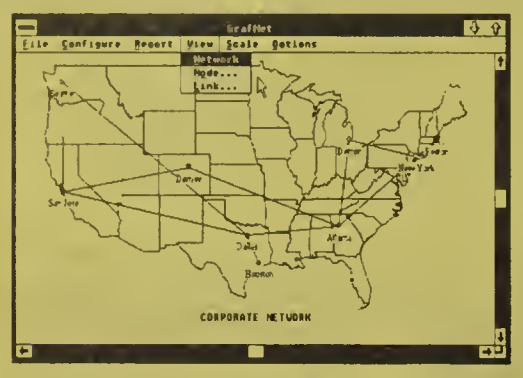

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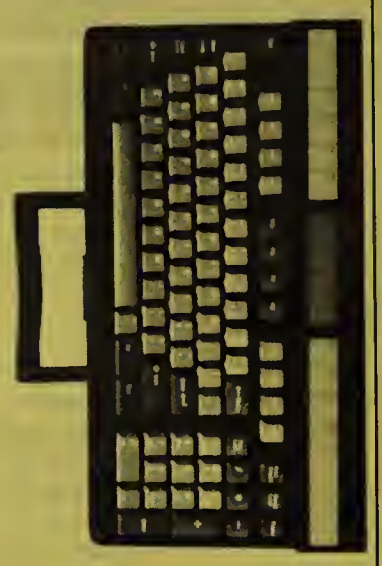

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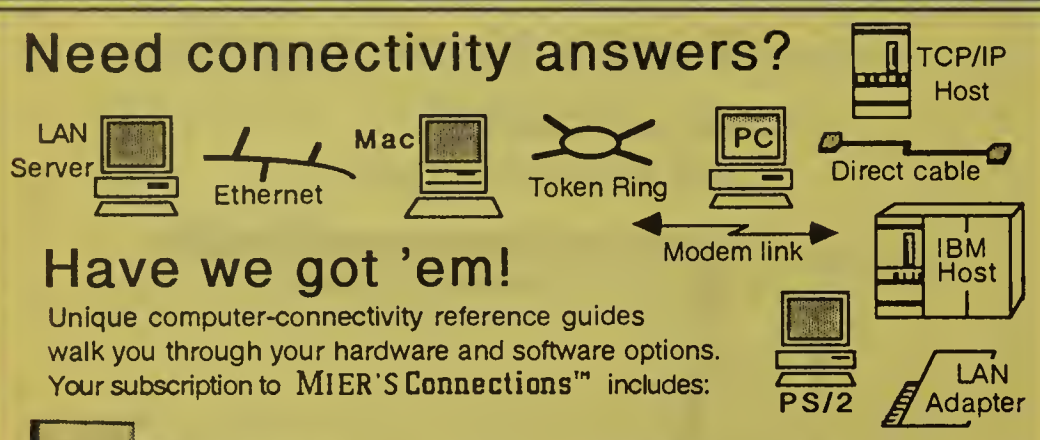

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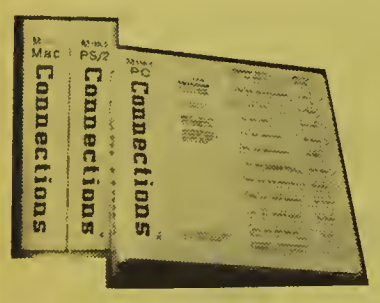

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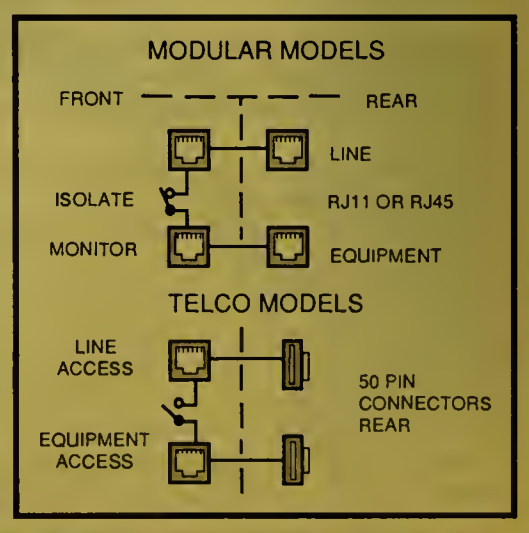

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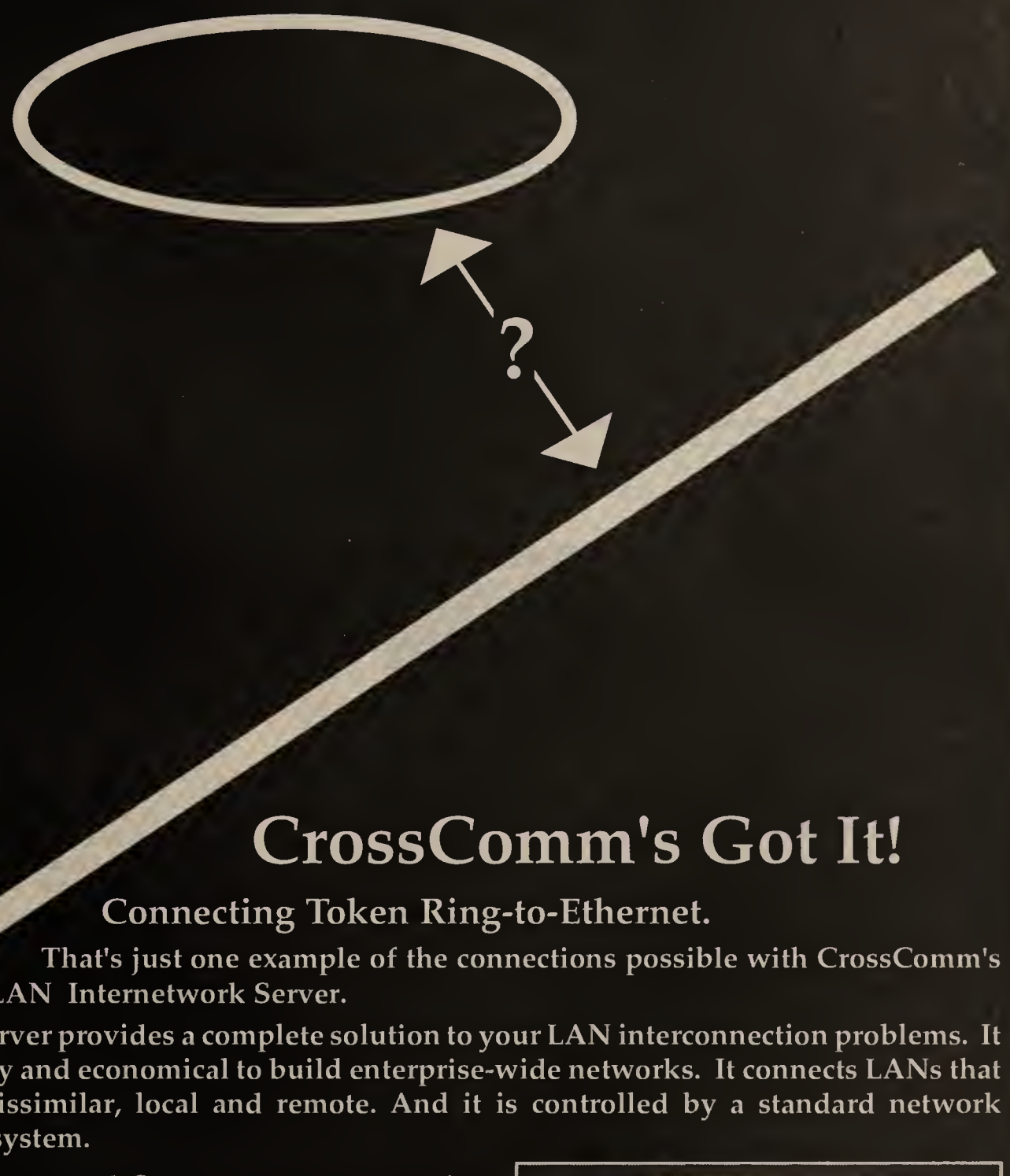

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5,600-6,999	$6.00
7,000-8,399	$5.65
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Your price will depend on the size of your ad. The 1990 1x open line rate is $8.00 per line or $112.00 per column inch.

The mimimum ad size is two column inches (1-1/4" wide by 2" deep) and costs $224.00. You can run larger ads in half-inch increments at $56.00 per half column inch.

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2 columns x 2"	$448.00
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5 columns x 7"	$3,920.00

PAYMENT: If you're a first-time advertiser or if you haven't established an account with us, we need your payment in advance (or with your ad) or a purchase order number. Once you have established an account with us, we'll bill you for any ads you run as long as your payment record is good.

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Data Communications Manager

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Salary for this position will be commensurate with experience. Benefits include a generous pension program, fully paid medical and long-term disability insurance, one month's annual vacation, life insurance, and tuition support for children.

An interested person should send a letter of application, resume, salary requirements, and the names and telephone numbers of three professional references to: Kenneth R. Ervin, Computing Center, Oberlin College, Oberlin, Ohio 44074. Fax copies may be sent to (216) 775-8739. Application materials should be received by June 29, 1990 to ensure consideration. Applications received after that date may be considered until a qualified candidate is appointed.

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The Spruce Goose®

The plan that didn't quite fly

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**Central Office Connection and Central Office Function charges not included in waiver offer.

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The right choice.

NETWORK WORLD

Switched digital services (continued from page 38)

Company	Service	Service type	Speeds supported (bit/sec)	Network facilities used	Access required	Areas served	Service installation fees	Monthly service costs	Minimum usage required	Usage fees (8)	Usage fee basis	Performance statistics	Special features
Pacific Bell San Francisco (415) 823-6380	CenPath	Intraexchange; interexchange access	56K; 64K (intraoffice only); subrate speeds depending on CPE	General Public Network	Voice grade (2-wire)	End offices/ POPs: 108	Service: offered as part of Centrex, no switched data charges apply (5); access: $170 per line	Service: offered as part of Centrex, no switched data charges apply (5); access: $39.65 per line	None	Usage fees same as voice; standard local, MTS and/or toll rates apply when calling over public network	Varies by locality and service	100% error correction up to 9.6K bit/sec	Full range of Centrex features: automatic dial, automatic call-back, direct connect, speed calling, hunting, etc.
	Public Switched Digital Service (6)	Intraexchange; interexchange access	56K	General Public Network	Switched local access	End offices/ POPs: 2 basic offices; multiple remote	Service: $725 for basic, $1,095 for remote; access: varies by area	Service: $165.50 for basic, $259.50 for remote; access: varies by area, $2.65 per mile interoffice	None	$.07 for first 30 seconds; $.01 for each additional minute	Flat, all service is hubbed	Error-free seconds: 95% on 95% of calls	None
Southwestern Bell Telephone Co. St. Louis (800) 255-7928, ext. 110	MicroLink 1 Switched 56K bit/sec	Intraexchange; interexchange access	56K	General Public Network	Provided via a switched 56K bit/sec telephone service line for data	End offices/ POPs: 50 primary; 125 remote (7)	Service: $0; access: $550 to $700 per line	Service: $0; access: $100 to $125 per line	None	$.12 for first minute; $.10 for each additional minute; inter-LATA usage for interexchange carriers is Feature Group D plus $.05 per minute	City-pair based	NA	None
	Plexar	Intraexchange; interexchange access	64K	General Public Network	ISDN BRI	End offices/ POPs: 150+	Service: provided as part of Centrex service, ICB; access: ICB	Service: provided as part of Centrex service, ICB; access: ICB	None	Varies by customer size	Mileage-based	Error-free seconds: 97% for end-to-end 64K bit/sec B-channel connections	None
US Sprint Communications Co. Kansas City, Mo. (800) 877-6584	VPN 56	Interexchange	56K; subrates with compatible DSUs	General Public Network	T-1; DDS (3Q/90)	End offices/ POPs: 302	Service: $200 per location (presently waived); access: pass-through LEC costs	None	None	On-net-to-on-net VPN rates: vary from $.06 to $.127 per minute before discounts	Mileage-based	Error-free seconds: 97.5%	Full range of VPN features: 7- to 10-digit private plan; consolidated billing; T-1 access partitioning
	SDS 56	Interexchange	56K; 9.6K and 19.2K subrates with compatible DSUs	Separate subnet-work	T-1; DDS (3Q/90)	End offices/ POPs: 302	Service: $734.55 per location; access: pass-through LEC costs	Dependent on service delivery volume and other factors	592 minutes of usage	Varies by contract	Mileage-based	NA	None
	Dial 1 Digital	Interexchange	56K; subrates with compatible DSUs	General Public Network	Digital Switched Access	End offices/ POPs: dependent on LEC access (1)	Service: variable depending on LEC; access: pass-through LEC costs	Service: variable depending on LEC; access: pass-through LEC costs (ranges from $10 to $65)	None	Depends on rate period; vary from $.092 to $.325 per minute	Mileage-based	Same guarantees as Dial 1 voice services	None

BRI = Basic Rate Interface
DDS = Digital data service
ICB = Individual-case basis
LEC = Local exchange carrier
NA = Information not available
POP = Point of presence
PRI = Primary Rate Interface

FOOTNOTES:

(1) Dial 1 Digital lets users originate and terminate data/video on existing Feature Group D lines when the LEC has digital connectivity to US Sprint's point of presence. Thus, this service is dependent upon the LEC and its agreement to offer switched 56K bit/sec at FGD prices to remain consistent with US Sprint's "data for the price of voice" philosophy. The following LECs are participating: Ameritech, Centel Nevada, Contel, Pacific Bell, Southern Bell and UTI.
(2) Tariffed in Massachusetts only.
(3) Product is not presently tariffed but is available on an ICB.
(4) Service expands to include 384K bit/sec (December 1990); 1.536 (second half, 1991).
(5) Requires purchase of a minimum of two Centrex lines in addition to the CenPath line; available in DMS-100 offices only; customers must meet certain loop length requirements.
(6) Pacific Bell is planning to replace PSDS in the fourth quarter, 1990.
(7) MicroLine I service arrangement allows customers who are not served directly from a Switched 56 central office to have this service. The result is that almost any customer in an area that has a Switched 56 central office can be provided MicroLink I regardless of whether their serving office is Switched 56 equipped or not.
(8) Usage fees listed for all Bell operating companies do not include interexchange carrier toll charges.

This chart includes a representative selection of vendors in the switched digital services market. Many vendors not included offer a full range of competitive products. Ameritech and US West were unable to respond by press time.

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

(continued from page 39)

sively trying to stimulate the customer base of the product through price. Most local exchange companies first tariffed switched 56K bit/sec services as an improvement to network switches, requiring certain amortized paybacks to recoup the costs.

This was accomplished with a per-minute surcharge of 8 to 14 cents for the switched 56K bit/sec traffic. However, when combined with Feature Group D equal access charges — about 4 cents per minute — there was a 12- to 18-cent surcharge on each end of a call, making switched access-originated data calls cost as much as 36 cents per minute before the long-haul charges. Last year, a New York-to-Chicago call cost 55 cents per minute, which is quite expensive.

This surcharge has limited development of applications for the service on a local level. To remedy this situation, New York Telephone dropped the surcharge, making a switched data call the same price as a plain old telephone service call plus the 4-cent equal access fee. Thus, a New York-to-Chicago call now costs 41 cents. If Ameritech drops its switched data surcharge, the cost will drop still lower.

Later this year, New York Telephone will release its ISDN-based switched 64K bit/sec offering as part of its initial rollout of the Basic Rate Interface (BRI). New York Telephone is adopting the philosophy that the conversion from 56K to 64K bit/sec should be as seamless as possible, with emphasis on the interoperability of the two.

The ISDN offering will treat BRI as an upgrade to the present facility — whether it is a Centrex or standard business line — giving the user two bearer facilities.

The initial service will be only for intraexchange transmission. ISDN enables detection at the time of the call as to whether the terminating end is a switched 56K or 64K bit/sec connection. The ISDN customer premises equipment is capable of downsizing the data speeds to be compatible with the terminating equipment.

Initial deployment of these ISDN services will be in downtown Manhattan and will be largely customer-driven in the first stages. The carrier is working on a PRI access option, which it hopes to make available in the first quarter of 1991. New York Telephone will also hold interexchange carrier service trials with AT&T and MCI next year.

New York Telephone will use the same pricing for 64K bit/sec that it uses for 56K bit/sec service. There are multiple reasons for this. First, most data communications managers are unwilling to pay significantly more for switched 64K bit/sec data. Second, there is little incentive for New York Telephone to create a new billing system for the ISDN offering when it considers it a long-run replacement for switched 56K bit/sec service.

The other BOCs

Other more progressive local exchange companies include Ameritech, Centel Nevada, Contel, Pacific Bell, Southern Bell and UTI.

Pacific Bell itself has at least four different switched data offerings, with another due out later this year. The carrier has already tariffed its ISDN BRI product as a Centrex enhancement, called Centrex IS.

Pacific Bell plans to deploy 35 central offices in the Los Angeles, Orange County, San Diego, San Francisco and Sacramento, Calif., areas. About 14,000 lines will be installed by the end of 1990 — about half Northern Telecom, Inc. DMS-100-based and half AT&T 5ESS-based. Although the service is currently intraswitch, Pacific Bell plans to interwork line-side ISDN with network-side ISDN switched 56K bit/sec service by year end.

Pacific Bell is also proposing a PRI service for the end of this year. This would be available to any device meeting the interface specifications such as private branch exchanges, hosts and local-area network bridges. The service will include the ability to use PRI access to internetwork multiple customer sites up to 64K bit/sec.

All of the companies are com-

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Switched-on carriers

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mitted to the idea of "data for the price of voice" and are trying to promote development of the switched 56K bit/sec offerings.

Southwestern Bell Corp. and US West, Inc. are reportedly working through internal problems with the tariff and determining how they will price the services. Bell Atlantic Corp. is pinning a lot of its future data connectivity on ISDN, which it is now implementing.

But a problem exists in billing. With limited availability of end-office support for switched data services, a call will sometimes be routed through several offices until the routing center is reached. When this happens, it's possible that a call placed in Morristown, N.J., for example, will show up on the user's bill as originating in Newark, N.J. For most managers, these billing problems are quite annoying.

When it comes to switched data, the industry has cleared the first hurdle — cost. By establishing data rates at the same price as voice rates, the carriers have encouraged usage.

However, the difficult part is connectivity. There is no problem getting access into the top metropolitan areas, but when users start looking for compatible access in the second- and third-tier cities, problems occur. ISDN will alleviate these problems in the future, but again, initial ISDN implementation will be concentrated in large metropolitan areas.

For now and the near future, switched data services are still a large-user, large-application product because of high access costs. The one saving grace is decreasing dedicated access costs, which let users efficiently access interexchange carriers' products.

The local exchange carriers, however, have a great deal of work ahead. They are just getting over the cost hurdle. The superficial switched access surcharges must be eliminated nationwide before ubiquitous access to switched data becomes a reality.

Report by MIT explores IS issues

continued from page 23

time-consuming and test the mettle of the technical professionals who oversee them, as well as that of the employees who use the new systems. Companies that have supportive executives, highly trained and motivated workers, a flexible organizational structure and a sense of teamwork are apt to make effective use of new technologies (see graphic, page 23).

"Implementing new information technology is a litmus test of companywide competence," the report stated. "This is a case of the rich getting richer."

Winning companies in the 1990s will continually seek new, innovative uses of information technology that enable them to capitalize on business opportunities. These companies will have senior executives eager to explore strategic uses of technology, as well as technology managers who can communicate potential applications in terms that senior executives can comprehend.

"Companies that perceive the potential [of information technology] and vigorously act on it first are likely to command their markets over the longer term," the report stated.

According to the study, successful companies will use combinations of technologies to support such applications as computer-integrated manufacturing and just-in-time delivery, applications that improve the efficiency of internal operations and enable them to get products to market more quickly.

"Shorter time to market will be a critical success factor in the competitive markets of the 1990s," the study stated.

Net pros can play key role

continued from page 23

■ **Brainstorming.** In this case, network managers generate ideas about how to apply technical solutions to meet an executive's business problem or goal. Often, an executive will ask a network manager to come up with a number of different technical strategies to approach a problem.

■ **Devil's advocate.** Executives sometimes want net managers to examine a proposal submitted by someone else in the company for flaws and weaknesses. A devil's advocate challenges executives to think through their ideas. This evaluation is vital to uncover technical or management problems before resources are wasted or the project is endangered.

Network managers should be careful, however, because this type of advisory role places them in the midst of controversy. They should expect some resentment from the person who submitted the proposal, especially if it's less than watertight.

■ **Multiple solutions.** Similar to the devil's advocate, executives may ask net managers to submit a proposal for a project to serve as a yardstick to measure the effectiveness of plans presented by line managers or their staff. Having an alternative solution in hand forces the executive's staff to come up with a more detailed, cost-efficient proposal of their own.

AT&T evaluating aggregators

continued from page 15

aggregation as part of AT&T's marketing strategy?

Our position is that AT&T has 19,000 people in the sales force and over a billion dollars worth of sales expenses per year. That is the way I want to reach the 90% or more of our customers.

An AT&T national account manager told one of my clients that if he wanted to reduce his bill without going to MCI, US Sprint or some other competitor, he should go to an aggregator. Is this truly the only option?

If price is his major concern, then his options are indeed limited. If he goes to an aggregator, however, he introduces a distance between himself and AT&T — he brings in a third party. It's as simple as that. If I want clarity in relationships with my major suppliers, I deal directly with them. If I want less clarity, I may bring in a third party to advise me on what to do. If I want absolute confusion, I'll then buy that service through a third party.

What is AT&T's current attitude about who is AT&T's customer — the aggregator or the aggregator's client?

The aggregator is certainly our customer, and the end user is the aggregator's customer. But as long as we are billing and servicing the end user, we have difficulty in not thinking of them as a customer as well. In terms of the financial liability of the customer, it becomes less clear. For instance, with [the Revenue Volume Pricing Plan], it is clearly spelled out in the tariff that the end user has a shared liability. With [Software-Defined Network], it is absolutely not there.

> "AT&T has 19,000 people in the sales force and that is the way to reach our customers."
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> "If I want absolute confusion, I'll buy service through a third party."
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You use the terms "resellers" and "aggregators" interchangeably. There are many levels to aggregation as I see it — resellers, rebillers, aggregators, subaggregators, users groups and sales agents — all being lumped under the term "aggregation." That doesn't seem appropriate.

That's exactly right. But I would not put sales agents in that category. Our major focus now is on those non-facilities-based resellers that buy an AT&T SDN and then resell it through partitioning and location billing to end users. I call these switchless resellers.

In these cases, the end user's relationship with AT&T changes significantly: they don't buy communications services from AT&T; they buy it from their reseller. There are risks with that. AT&T has been in business for a hundred years; many SDN resellers have sold long-distance for less than a year. What I don't want is for our customer to feel that the principal way to interface with AT&T is any way other than through our direct sales force.

One of the principal weapons AT&T has used against aggregators has been the tariff. What are AT&T's plans in the near future to limit aggregation?

We have no intention of limiting the aggregation or resale of our services. But understand that our tariffs can change at any time. I would say that they will likely change with the same frequency as they have in the past.

One of our recent surveys showed that approximately $1.6 billion in sales annually is being aggregated right now, mostly under AT&T products.

We have not done a sampling of the marketplace. We're trying to do two things now. We're grouping all of the resellers into an organization that is not the traditional sales support team. This will help us find out how many are out there. Then we're doing follow-up analyses that will tell us how many multiple location plans there are out there, how many RVPP plans, how many SDN plans, who are the commercial customers and who aren't. That's not an easy task and will take some time.

How long will it take?

I usually use a nine-month horizon when looking into the future. That's the kind of vision I see here.

Many of these customers were sold aggregation on the basis that nothing would change in their relationship with AT&T. But things are changing. What can you say to those customers about the stability of their long-distance service?

What I can say is that they will have plenty of notice and customers will not be disadvantaged by anything we do. That's why I say nine months, not two weeks. But we will clearly define the difference between our product as provided through an aggregator and as provided through AT&T. There have to be differences in the product and risks. We have not figured out how to do this yet. Our first concern is the SDN resellers.

Why the SDN resellers as opposed to a Multi-Location WATS or RVPP reseller?

There seems to be more abuse of the relationship with AT&T and the brand with SDN than with aggregators.

What sort of abuse?

People buying an SDN contract and then saying they have a special partnering relationship with AT&T.

I heard you have rescinded nearly 25% of your comarketing agreements recently. Is this true?

We went into the marketing agreements with the understanding that they would benefit AT&T as well as the aggregator. We are reevaluating each one of them now. Some of these companies are moving from [Multi-Location Calling Plan] to SDN. When this happens, in my mind, they have entered the telecommunications business and are now my competitors. I can't have a comarketing agreement with my competitors.

What means can AT&T use to limit SDN reselling?

I don't really know at the moment. We are meeting weekly with the SDN product team to find out. We want to make sure SDN serves the top end of the market. There will probably be modifications to the product that will ensure this but that may not serve the reseller. But nobody knows exactly what these steps will be.

Our principal concern is making sure SDN still meets the general needs of the marketplace. This will be an evolution over time with the principal theme being that the vast majority of customers should have a direct relationship with AT&T. If our products are not inciting that behavior, then we will take a hard look at our products.

This week's FAXNeT ADVERTISERS

FAXNeT is a service designed to help readers of *Network World* gather important information via FAX on products and services advertised in *Network World*.

How to Use FAXNeT

Listed below in the FAXNeT Directory are the FAX numbers of participating advertisers in this week's issue of *Network World* and the page number where the ad appears. To use FAXNeT cut out the FAXNeT form and make a copy of the form for each inquiry you want to make. Then just FAX it to the vendor's number listed in the FAXNeT Directory.

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NETWORK WORLD

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Users rein in ANI projects

continued from page 1

barred the carrier from offering the services. The carrier has appealed the ruling to the state's Supreme Court ("Court bars Pennsylvania Bell from offering caller ID," *NW,* June 4).

"This is a big step backward for caller ID," said Bard Haerland, vice-president of Unisys Corp.'s communications and networks group. The Blue Bell, Pa.-based computer vendor has dropped plans to test Bell of Pennsylvania's caller ID service, which was scheduled to become available in January, for use in customer service applications.

"The ruling has left the entire privacy issue in a very unsatisfactory state as far as we're concerned," Haerland said. Unisys is experimenting with AT&T's ISDN Primary Rate Interface (PRI) service and its ANI feature.

Victor Toth, president of The Law Offices of Victor J. Toth in Washington, D.C., a legal firm specializing in telecommunications, said ANI services offered by interexchange carriers may be found in violation of the federal wiretap law, which is almost identical to the Pennsylvania statute.

> "If we are going to be barred from receiving ANI, there's no point in spending on it."
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In addition, Toth said states may try to enforce blocking for interexchange services, protecting the privacy of their citizens.

Spending freeze

Days Inns of America, Inc., the first hotel chain to use AT&T's PRI service, is freezing spending on ANI applications in the wake of the ruling.

"We were going to make some capital investments in products that would help us take advantage of the technology," said Doug Patterson, reservation systems director for Days Inns. "But those will be delayed. We're going to be prudent and see which way the issue goes before we start spending again."

Patterson said he is concerned that the ruling may ultimately affect the collection of caller ID data. "If we are going to be barred from receiving ANI, there's no point in spending any more on the [technology]."

Days Inns uses ISDN to provide a higher level of service to the 900 travel agencies that book rooms in the chain's 1,250 hotels nationwide. When agencies call Days Inns' Atlanta or Knoxville, Tenn., reservation centers, the company matches the incoming number against a data base and then sends the calling agency's profile to an agent's terminal with the call.

Patterson said he fears that the groups that challenged caller ID in Pennsylvania will try to duplicate their success in other states. "I think they would have a tougher time doing this in pro-business states like Georgia, but who knows. It's too early to tell where this [issue] is going," he said.

Caller ID postponed

The ruling has forced Daniel Gonos, store systems director for Domino's Pizza, Inc. in Ann Arbor, Mich., to postpone plans to use caller ID service in the firm's 144 stores in Pennsylvania. "We hope that on appeal, the decision will be reversed. In my mind, caller ID doesn't fit the classic description of a wiretap, which is someone listening in on a telephone conversation."

Gonos said the company's 5,000 stores nationwide last year received 462,000 undeliverable orders, most of which were fraudulent. Those orders cost the firm $4.62 million. With caller ID, Domino's employees could match the ANI against the residential telephone number in the customer's profile. If the two did not match, Domino's could recheck or hold the order.

Two Domino's stores in New Jersey have realized a 90% decrease in undeliverable orders in the months since they began using caller ID, Gonos said. A large part of that decrease is attributable to caller ID.

Roger Grossklaus, vice-president of operations for Philadelphia-based US Healthcare, abandoned plans to use Bell of Pennsylvania's caller ID service, which the company said it had hoped would speed processing of several hundred thousand calls a year at the firm's Blue Bell and Pittsburgh customer service centers.

"It's an unfortunate decision that took away a valuable marketing tool in this state," Grossklaus said.

He added that the Pennsylvania appeals court ruling will not stop the company's plans to use caller ID at US Healthcare customer service centers in five other states. Grossklaus said it is too early to tell if the ruling applies to interexchange carrier ANI services.

The American Civil Liberties Union, one of three groups opposing caller ID in Pennsylvania, has vowed to fight caller ID services across the country. "The tide has turned on caller ID," said Scott Burris, a staff attorney for the ACLU. "This was a convincing victory."

According to Toth, "It is, at this point in time, the *only* precedent on this subject and is, therefore, bound to be given some weight."

AT&T tries to lure users

continued from page 2

with a multiuser host environment and gives PC users a good LAN server along with all the advantages of Unix," said Thomas Wood, an industry analyst for Business Research Group, a market research firm in Newton, Mass. "AT&T is definitely going after the DOS work group market."

Unix is still a four-letter word in many parts of that market, though. "The biggest problem they face is getting Unix into the office," Wood said. "Part of their strategy is to try to get away from selling Unix and to talk about various types of services instead."

Roger Deeringer, a member of AT&T's technical support staff who had booth duty at Comdex, said that approach seemed to be paying off.

AT&T's booth was one of the busiest spots on the exhibition floor — perhaps aided by the fact that major local-area network software and hardware vendors such as Compaq Computer Corp., IBM, Microsoft Corp., Novell and 3Com Corp. elected to skip Comdex this spring.

"The people here at Comdex are very DOS-minded," Deeringer said. "They came up wanting to talk DOS and walked away talking Unix. They saw what LAN Manager/X could do for DOS clients and were amazed that we could put all of this on Unix."

The StarServer E hardware was designed by AT&T Bell Laboratories and incorporates several unique features that are being patented. One is a system bus architecture consisting of two parallel 64-bit data buses linked by one 32-bit address bus. According to AT&T, this bus architecture produces a 267M byte/sec sustained — not burst — data transfer rate.

The system bus has five slots for any combination of AT&T's 80486 system and memory boards. The server can be configured with four system boards and one memory board, or vice versa, or a three-two or two-three combination, with the optimal configuration depending on the application environment.

The memory incorporates the industry-standard Error Correcting Code, which detects and fixes single-bit errors, and detects and logs double-bit errors. The information in the log is used to map around memory areas that produce repeated errors.

The memory boards can each contain as much as 128M bytes of memory, which means that a uniprocessor configuration with a single 80486 chip can have as much as 512M bytes of system memory.

When a server has two memory cards, data with odd addresses is put on one card and data with even addresses goes on the other. Data access can then be interleaved between the two 64-bit data buses, with one serving the odd memory card and the other devoted to the even one.

Each 80486 processor board has 8K bytes of internal cache memory and up to 256K bytes of external write-back cache memory. Separate caches present a data integrity problem, since one processor could access data in main memory that has been changed in another processor's cache but not yet written to main memory. This problem is solved by a "snooping" protocol that watches the address bus for addresses of modified data.

In addition to the five proprietary system-bus slots, StarServer E has 12 EISA slots that accommodate the system's 32-bit bus master Small Computer System Interface (SCSI) controller and other peripherals, including LAN adapters. Up to eight of the slots can be used by SCSI adapters, providing a maximum of 48G bytes of on-line mass storage.

StarServer E is compatible with IBM's Token-Ring Network and comes with drivers for Ethernet adapters from 3Com and Racal InterLan. Industry-standard protocols and interfaces it supports include Transmission Control Protocol/Internet Protocol, X.25 and IBM's Systems Network Architecture.

StarServer E is 30-in. high, 13.5-in. wide and 31.5-in. deep. A base configuration with 8M bytes of system memory, one 80486 system board, one SCSI adapter, two 200M-byte hard disks, one 3.5-in. floppy disk drive and a 320M/525M byte tape drive is priced at $27,500.

The server will be available as a multiuser Unix host in August, and NetWare support might be certified even sooner. The LAN Manager/X option is expected to be available in October, after the version based on Unix V.4 is finished.

Novell to intro Comm Server

continued from page 1

ware, which have been under development for the past two years, will run as NetWare Loadable Modules (NLM) on NetWare 386 servers, Machi said.

With Version 3.1 of NetWare 386, due out later this month, NLMs can for the first time be loaded and unloaded dynamically without taking the server down and rebooting it.

The Comm Server NLM acts as a traffic cop directing users' requests to other communications NLMs.

With NetWare Services for SAA, for example, the NetWare 386 Version 3.1 server would establish a Systems Network Architecture session with the appropriate SNA host, Machi said.

"NetWare Services for SAA will enable users to access any application on an IBM host, including OfficeVision, or establish an LU 6.2 session to an IBM host as though it were on the same NetWare network," Machi said.

The communications NLM functions will appear as options on a NetWare 386 Version 3.1 menu, shielding the user from the complexities of establishing links to other net environments.

Currently, NetWare users who want to access an IBM host must exit their NetWare application and run a terminal-emulation program. A network-based SNA gateway then translates the protocols and allows the user to establish the SNA session.

"The Comm Server, working in tandem with the multiple protocol stacks in NetWare 386 Version 3.1, eliminates all that," said Mary Modahl, an analyst with Forrester Research, Inc. in Cambridge, Mass.

"It allows users to automatically establish SNA sessions from within a NetWare application, regardless of where the application is located on the corporate wide-area network," she said. "The beauty of Comm Server is that it masks the complexity of the disparate nets beyond the server."

Machi said Novell will also announce several other NetWare 386 Version 3.1 NLMs tomorrow. Those include NLMs that will enable users to access Transmission Control Protocol/Internet Protocol, Open Systems Interconnection and X.25-based applications. Novell and third-party suppliers will roll out the NLMs at various times over the next 12 to 18 months, he said.

Analysts hailed the products, saying they will give Novell one of the best WAN and IBM SNA connectivity platforms in the industry.

"The Comm Server NLM and the other NLMs that will run on top of it constitute the perfect vehicle to provide NetWare users with a window to the enterprisewide, corporate computing environment," said Doug Gold, director of communications industry research at International Data Corp. in Framingham, Mass.

Novell has already lined up a number of third-party vendors and development partners that will write NLMs for NetWare Version 3.1.

Among those participating in tomorrow's announcement will be Compaq Computer Corp., Digital Communications Associates, Inc., Indisy Software Corp., Phaser Systems, Inc. and SynOptics Communications, Inc.

Novell said pricing for the NetWare 386 Communications Services software and the NetWare Services for SAA will be announced tomorrow.

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THE INDUSTRY STANDARD

Harris builds control system

continued from page 1

tions services at Harris.

The company will implement an initial version of the integrated net management system this summer and plans to complete all upgrades by the first quarter of next year.

"We were getting discouraged that we were not seeing [vendors] addressing net management the way we would like," Snell said.

According to Jim Odom, manager of systems support at Harris, commercially available network management products such as AT&T's Accumaster Integrator and IBM's NetView do not do a good job of tying together the logical view of the SNA net and the control of physical devices such as modems and bridges.

Harris also decided to build its own network management system in part to save money. "We could spend $500,000 on AT&T's [network management] system and then pay them $500,000 to customize it for us," Odom said. "We can do it cheaper ourselves, and we understand the problems better than most vendors."

From DOS to Unix

Harris' integrated net management system consists of the Network Expert Advisory Tool (NEAT) and the Alarm Interface Reporting System (AIRS), applications that run on a Unix file server. Help desk staff or network operators access applications using five X Window terminals or personal computers connected to an Ethernet running Transmission Control Protocol/Internet Protocol (see graphic, page 1).

All of Harris' net management applications use X Window and share a common user interface based on the Open Software Foundation's OSF/Motif.

Harris' system is based on software it developed four years ago to run on individual DOS personal computers ("Expert system monitors nets," *NW,* Sept. 7, 1987). Harris subsequently sold the rights to this DOS software to Inter-Data Engineering, Inc. of Miami, which is currently marketing the product.

Essentially, Harris has upgraded the DOS software to run on Unix, which provides multiuser and multitasking capabilities, among other features, Odom said. Under the DOS version, which Harris still uses, help desk staff have to shift between different terminals to access different applications simultaneously.

NEAT is an expert system that diagnoses and resolves problems on the SNA VTAM network using data obtained from IBM's NetView network management package, which resides on the company's IBM host computers here. The server is linked to the host through a front-end processor. The expert system presents help desk personnel with a simple text statement about the cause of a problem and how to fix it.

AIRS collects alarms generated by a variety of network devices and net management systems throughout the network. It receives data in ASCII format from these devices and reformats it for display on the screens of the help desk terminals.

Currently, AIRS can continuously poll network devices from as many as 16 vendors through asynchronous connections from the server. Depending on the network device, AIRS can also issue corrective commands to resolve problems. Harris uses AIRS to monitor devices such as statistical and time-division multiplexers, and bridges and routers from eight vendors, including Avanti Communications Corp., Proteon, Inc. and Vitalink Communications Corp.

Correlation is the key

To correlate information about the logical and physical aspects of the network, Harris will construct a relational data base that defines every IBM and non-IBM network element, and its relationship to all other elements. This configuration data base will reside on the server.

When an alarm comes in, the help desk operator will tell the NEAT expert system to query the configuration data base to determine all network elements associated with the device issuing the alarm. It will then search its own knowledge data base and present the help desk administrator with a detailed explanation of the network's problem, the devices affected and how to correct it.

Harris said it hopes to finish building the configuration data base, which will require an exhaustive analysis of the network, sometime early next year, Odom said.

At the same time, Harris will be upgrading its network management system to support application-to-application communications using remote procedure calls. This will let NEAT, AIRS and other applications automatically send one another commands. Currently, an operator must intervene to input information or issue commands.

Thus, AIRS will be able to send alarms directly to NEAT. NEAT, in turn, will be able to search the configuration data base and apply its rule-based logic to determine the problem. NEAT could then instruct AIRS to issue a specific command to resolve the difficulty, Odom said.

Harris said it plans to add a graphical user interface to its net management system later this year that will enable help desk operators to see a single graphical image of Harris' network.

Currently, the system only supplies operators with text descriptions. The graphical interface will use different colors to depict alarms and changes in the status of devices on the net.

European carriers hustle

continued from page 2

with each other for hub sites because hubs generate more revenue than end nodes on circuits originating in other countries.

The competition started in the mid-1980s, when the U.K.'s two international carrriers, British Telecommunications PLC and Mercury Communications, Ltd., began attracting a significant number of hubs, in part because of lower prices. In response, carriers throughout the continent began cutting prices, and as a result, price differences between service providers have diminished.

"It used to be that the difference between the cheapest [service] and the most expensive was 40%," said Leonard Elfenbein, president of Lynx Technologies, Inc., a consultancy in Little Falls, N.J., that specializes in international communications. "Now it's down to 20%."

As this trend continues, carriers face a future when price differences will be so narrow that their ability to persuade users to relocate hubs from one country to another will be limited.

"If the difference in price isn't that great, then it's really not worth your while to move," said a network manager with a major U.S. manufacturing firm who requested anonymity.

Making the next few years even more critical is the fact that several U.S. companies are only now establishing their first European private-line nets. The network architectures that these users opt for will guide investment decisions for years to come.

In order to win as much traffic as they can now, European carriers have escalated the frequency with which they cut prices and have begun offering users perks for signing up. The latest round of price cuts will commence next month, when France Telecom will cut international private-line prices by up to 15% and will begin offering 15% discounts on five-year contracts for intra-European private lines ("U.S. users get on-demand satellite links to France," *NW,* May 28).

> Elfenbein said users can expect European carriers to cut prices about once a year.
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Last week, Belgium's RTT responded with price cuts of up to 35% on domestic private lines. The RTT's Mirbach said the carrier will also institute hefty price cuts on international circuits next month, although she said the exact discounts have not yet been determined.

Elfenbein said users can now expect European carriers to cut prices about once a year, as opposed to the previous norm of once every 1½ or two years.

One of the popular perks emerging is free local-loop private-line services for users running international nets into a country. Mirbach said the RTT would consider doing this for users and that it would also consider offering users free or discounted maintenance services.

Elfenbein said that France Telecom and the U.K.'s two international carriers also offer free local-loop private-line connections to international private-line customers. He also said other European carriers may follow suit.

Ironically, as European carriers continue to lower prices, they may actually end up losing a significant chunk of their hub business here because the on-going price cuts are diminishing the price differentials between transatlantic and intra-European private lines.

Elfenbein said transatlantic circuits are now on average 25% more expensive than intra-European private lines. He said this means some users will find it cheaper to run private lines from existing U.S. hubs to multiple European cities, rather than invest in a hub in Europe.

Court strikes down edict

continued from page 1

vices through separate subsidiaries, which carriers say is inefficient and could hamper efforts to make services available on a widespread basis.

The ruling was seen as a major blow to the RBHCs, which have pushed hard on Capitol Hill to keep separate subsidiary requirements out of legislation. BellSouth Corp. issued a statement last week saying it is too early to determine the impact of the ruling on ONA, but the RBHC added that being forced to offer enhanced services through separate subsidiaries would have "severe social costs [for] the public."

The FCC said it was also upset by the ruling. "We lost big," conceded an FCC attorney who requested anonymity.

The FCC has three choices on how to handle the ruling. It can ask the full district court to reconsider the decision, appeal the decision to the U.S. Supreme Court, or accept the ruling and open a new proceeding to reexamine the separate subsidiary and state preemption issues. FCC sources said last week they would not rule out the possibility of a Supreme Court appeal.

The FCC must also try to determine how the ruling will affect its ONA proceeding. "ONA isn't necessarily shot out of the water by the ruling," one attorney said.

But FCC staffers admit they are concerned about how the court's ruling on preemption will affect ONA. "The ruling requires us to go back and take a hard look at any areas where we are trying to preempt state regulators," including matters other than ONA, one attorney said privately. This might include matters such as allowing competition for access services in the local loop.

The attorney said the court strictly interpreted federal law, ruling that the FCC can only preempt state regulators in instances where it is impossible for state and federal regulations to coexist. However, he admitted that he wasn't completely surprised that the district court ruled in favor of the states. "We knew there was plenty of room for doubt that we would win on the preemption issue," he said. The reason is that the U.S. Supreme Court has previously upheld the state's rights to regulate intrastate matters.

FCC sources said they are more disappointed that the court ruled against the elimination of separate subsidiaries but said that part of the decision will probably have less impact on ONA. This is because the FCC required the RBHCs to file ONA plans regardless of whether they intended to offer enhanced services through their telephone units. It is possible that ONA will proceed, but the RBHCs will not be allowed to integrate enhanced services with regulated offerings, he said.

The attorney admitted, however, that the RBHCs, which have pushed hard to consolidate services, could hold up ONA if they believe it is not fulfilling its original promise. "If the [RBHCs] feel like they got dumped on, they might come in and file petitions saying that ONA isn't doing them any good," he said.

Attorneys also speculated that the ruling will play a strong role in shaping legislation allowing the RBHCs into manufacturing and information services. Rep. Edward Markey (D-Mass.) has released a draft bill he is considering introducing that would allow the RBHCs to manufacture and provide information services. The bill requires the creation of new separate subsidiaries but establishes a procedure the RBHCs could use to get an exemption from that requirement. Markey has also discussed a provision that would allow the separate subsidiary requirement to expire after three years.

Telecommunications attorneys predicted that the court ruling overturning the FCC's decision to eliminate separate subsidiaries would virtually guarantee that legislation will have to contain such provisions in order to be passed.

ALLIGATORS IN THE SWAMP

Unforeseen problems that can put the bite on your network

Invasion of the phone snatchers

By DAVID WAGENHAUSER

To the horror of travelers and network managers alike, the *Invasion of the Body Snatchers* is no longer confined to late night television; it's being played out at telephones everywhere. Topping the bill in this tale of terror are the alternative operator service (AOS) providers.

While on a business trip, Frank Gilk, a principal engineer with NYMA, Inc. of Greenbelt, Md., discovered the consequences of a close encounter of the AOS kind. Using a hotel phone that appeared to be like any other, Gilt made a number of calls using his AT&T calling card. When he received his telephone bill, he was shocked to find that a company he had never heard of charged him $37.36 for those calls, which would have cost him $14.83 with his preferred carrier, AT&T.

As more than 4,000 complaints to the Federal Communications Commission attest, Gilk's experience is not unique. Consumers and net managers have reportedly received AOS bills that can run 200% to 300% over the costs charged by long-distance companies such as AT&T, MCI Communications Corp. and US Sprint Communications Co.

AOS attack

AOS companies lurk at pay phones, airports, hotel and motel rooms, hospitals and practically any other transitory location. In return for commissions and surcharges billed on the premises owners' behalf, AOS firms become "presubscribed" to a phone. As such, they become the default carrier, and they intercept and bill operator-assisted calls, Bell operating company calls and calls made with most AT&T cards.

For the past few years, consumers who have written to the FCC complaining of ravenous AOS rates and lack of warning or notice that an AOS carrier is handling the call have received action: refunds equal to the difference between the billed rate and rate their preferred carrier would have charged.

The Telecommunications Research and Action Center (TRAC), a nonprofit consumer group, was concerned that only consumers who wrote to the FCC could avail themselves of this "write-in rebate." As a result, in July 1988, TRAC filed a complaint against five of the largest AOS companies asking the FCC to regulate them or put them out of business.

In February 1989, the FCC mandated that operator service providers identify themselves and that callers be allowed to access their carrier of choice. Both rules have fallen on deaf ears.

With regard to identification, the FCC order mandated that consumers be audibly and visually notified of the operator provider. As complaints show, many firms are not audibly identifying themselves. Likewise, callers are hard-pressed to find a hotel room or pay phone displaying an AOS sticker or placard — including at least one such pay phone located on the same city block as the FCC.

The FCC's attempt to correct the market has also failed because many phones continue to illegally block access to competing carriers. Of the three methods of accessing a carrier, 10XXX, which allows a caller to reach almost any carrier, is the most commonly blocked, while 950 and 800 access — most commonly used with non-AT&T calling cards — meet with fewer road blocks.

Dean Sparboe, president of Podisco, Inc. in Kernersville, N.C., said he experienced blocking first hand. Wary of AOS companies that have "sprung up like weeds," he attempted to access his preferred carrier using a 10XXX number only to find his access was blocked. Unlike P.D. Sterling, director of the Dallas-based Silent Harvest Ministries, who said he "drove 15 miles to find a 'safe' phone," Sparboe said he felt forced to use the presubscribed carrier and was charged three times the rate of his preferred carrier.

Wagenhauser is executive director of the Telecommunications Research and Action Center based in Washington, D.C.

The FCC recently conducted a surprise inspection to ascertain the level of compliance with its identification and blocking requirements. For now, however, the FCC's order has done little than perpetuate this motto: Trust no phone — you're on your own.

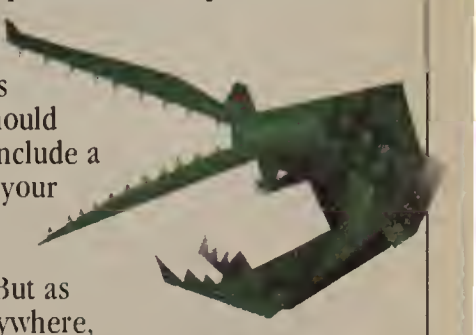
Staying alive

There are several ways to avoid falling prey to AOS services. First, equip your business travelers with calling cards of one or more companies you know and trust. Aside from direct-dialed calls, calling cards are the most inexpensive way to make a call while away from home or the office. Operator-assisted calls typically have frightening surcharges and should be avoided at all costs.

Second, advise your employees to be sure they are dealing with your company's preferred carrier. Consumers making calling card calls from companies accessed via a 950 or 800 number, (that is, MCI and US Sprint, not AT&T) in almost every case will be able to reach the carrier without having the call intercepted and billed by an AOS company. For those calls, simply follow the card instructions.

For operator-assisted calls and those made with BOC and most AT&T calling cards, it is important to know who the operator provider is at the phone because these calls are intercepted and billed by the presubscribed carrier. If the phone has no sticker or placard on it, dial "0" or "00" and ask for the identity of the provider at that phone.

If AT&T for an AT&T calling card call or your preferred long-distance carrier for operator-assisted and BOC calling card calls is not presubscribed to the phone, you can attempt to reach them by dialing "10288" (AT&T's 10XXX number), "0," the area code, the number and, if desired, the calling card number. Similarly, BOC calling card users and those wanting to place an operator-assisted call through a preferred carrier should follow the same procedure, substituting the access number of their preferred carrier — 10222 for MCI, 10333 for US Sprint and so on. If your access — via 950, 800 or 10XXX — is blocked, you will hear either a busy signal or a recorded message saying the call cannot be completed. If this happens, find another phone. Even the most diligent callers may later find that they've been tricked by a competitive clone. However, there are ways to remedy the misfortune and salvage your company's bottom line. After you recover from the initial shock of an AOS bill, call the company whose name appears on the bill. If you can get through to a customer service representative, explain the situation and request a refund to the rate of your preferred carrier. If the company is uncooperative, write to the FCC (for interstate calls) at the address below to apply for your write-in rebate. The letter should explain the circumstances of your experience and include a copy of the phone bill. For intrastate calls, write to your local public service commission.

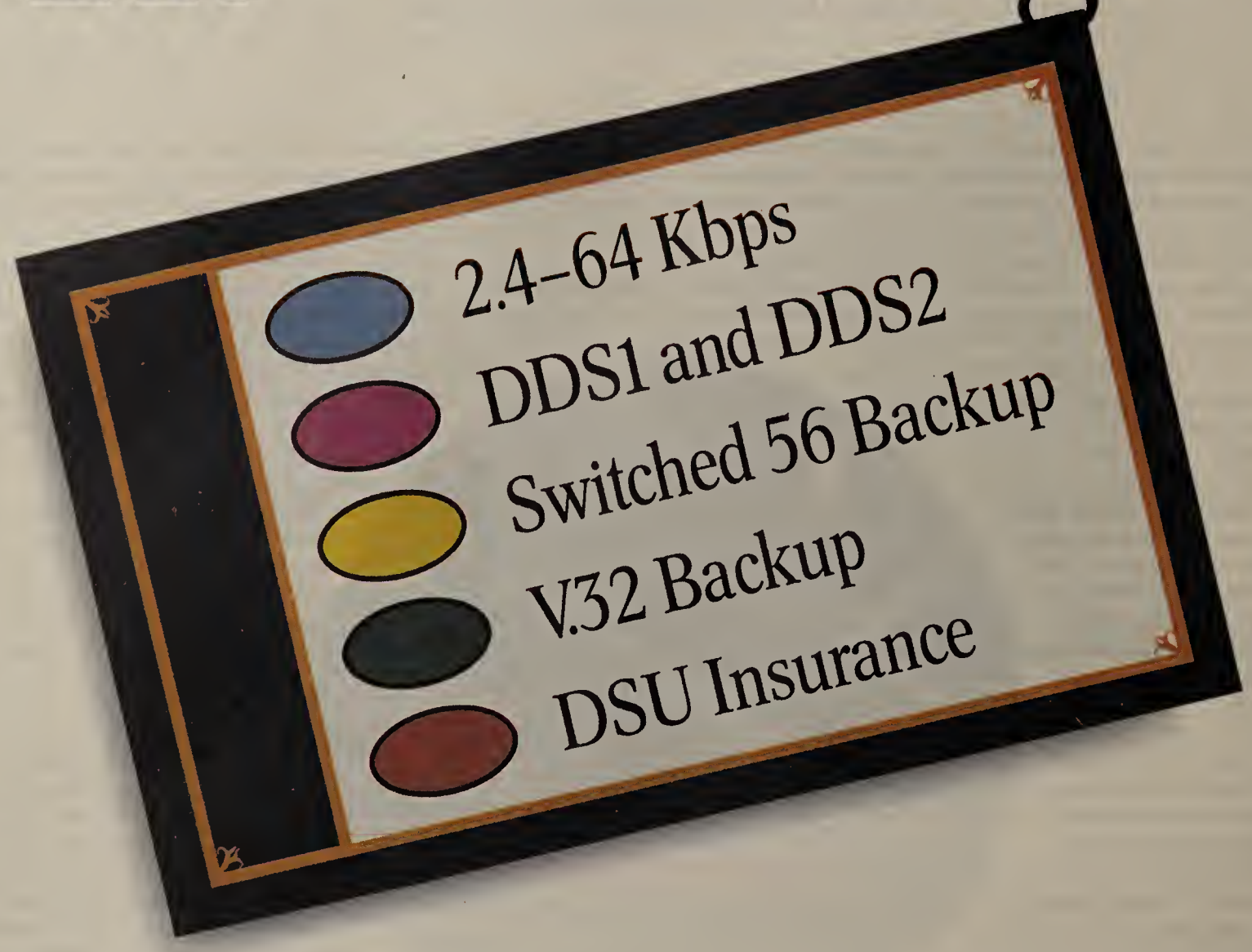


Not every AOS provider is a vampire ready to suck the green from your company's bloodstream. But as the supermarket tabloids blare, "Aliens are everywhere, even behind push-button pads."

If you have an AOS-related complaint, write to the FCC Common Carrier Bureau, Enforcement Division, Informal Complaints, Suite 6202, Washington, D.C. 20554.

IT'S HARD TO DRAIN THE SWAMP when those reptiles keep getting in the way. If you have a network "alligator story" to share with *Network World* readers, call Steve Moore, features editor, at (508) 820-7439 or fax your idea to (508) 820-3467.

Introducing the LN DSU. Winner in all categories.



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